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GAME DESIGN | CODING | ART | SOUND | BUSINESS

THE LONG WAY ROUND

CHARTING THE EVOLUTION OF MILESTONE

ART SHOWCASE ■ ESCAPE ROOMS ■ RAINBOW SIX SIEGE

AT A GLANCE

MAY 17TH
Farpoint (PSVR Aim Controller)
A new VR game and a new peripheral to go with it

MAY 26TH
Ramadan
Ramadan Mubarak to all of you fasting this year.

MAY 29TH
Bank Holiday
Yes. Another one. Look, banks need time to complete games too!

MAY 30TH
Star Trek: Bridge Crew
You better believe the entire team is going to be playing this one

DIARY DATES

NORDIC GAME 2017
May 17th-19th, Slagthuset, Malmo, Sweden
conf.nordicgame.com

MAY

Games First Helsinki
May 9th, Cable Factory, Helsinki, Finland
gamesfirsthelsinki.com

VRX Europe 2017
May 11th-12th, Victoria Park Plaza Hotel, London
events.vr-intelligence.com/europe/

C++Now 2017
May 15th-20th, Aspen Center for Physics, Aspen, Colarado, US
cppnow.org

Digital Dragons 2017
May 22nd-23rd, Krakow, Poland
digitaldragons.pl

JUNE

AppsWorld Evolution
June 13th-15th ExCeL, London
tmt.knect365.com/apps-world

Irish Symposium on Game-Based Learning 2017
June 22nd-23rd, Clayton Hotel, Cork, Ireland
www.igbl-conference.com

EVENT SPOTLIGHT

E3 2017
Where: Los Angeles Convention Center, Los Angeles, California, United States
When: June 13th-15th
New: For the first time, opens its doors to the public
e3expo.com

COMING SOON

DEVELOP #183
THE E3 ISSUE
Not only will Develop and MCV be at E3, but so will possibly thousands of members of the public. What will they see? What will be announced? Isn't it exciting?

DEVELOP #184
THE BEST OF BRITISH ISSUE
We celebrate the best of what UK game development has to offer and prepare you all for the Develop:Brighton conference and the Develop Awards this July.

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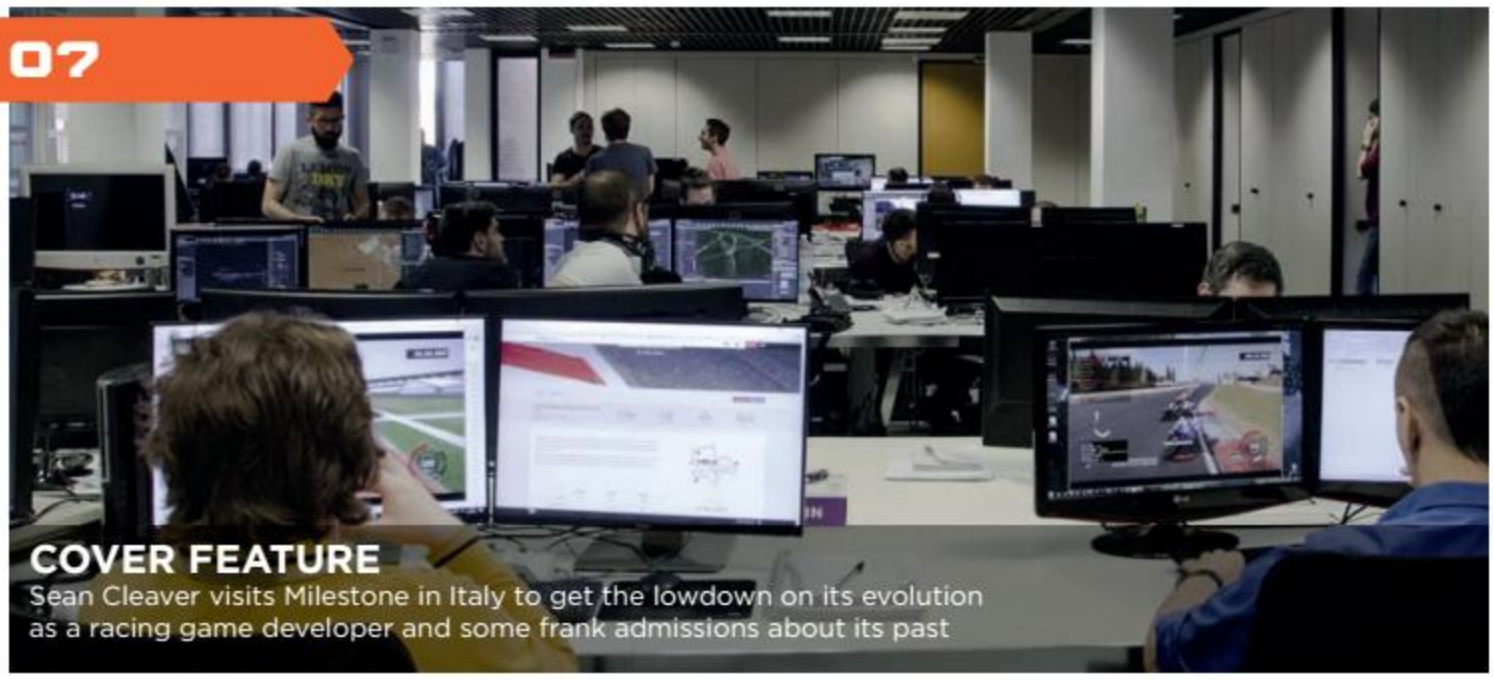

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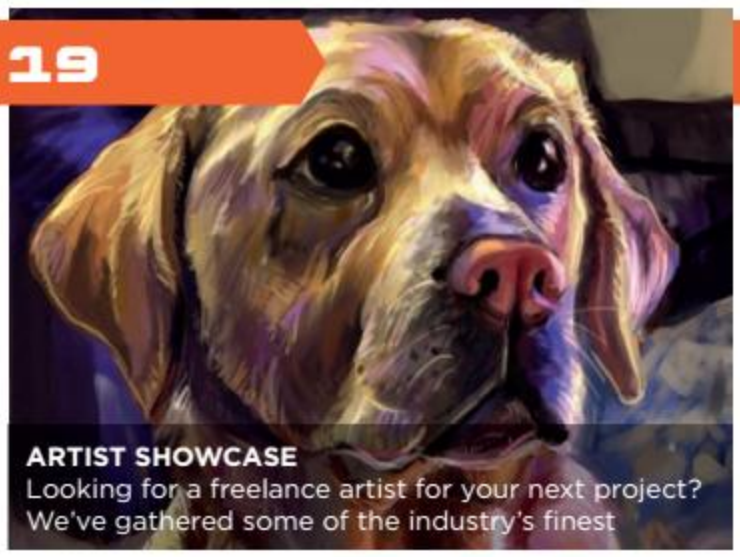
COVER FEATURE
Sean Cleaver visits Milestone in Italy to get the lowdown on its evolution as a racing game developer and some frank admissions about its past



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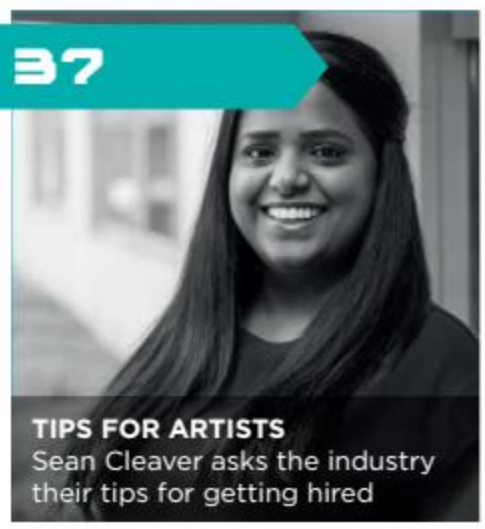

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Sean Cleaver asks the industry their tips for getting hired

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Editorial

I have a soft spot for artists. Initially my plan to get into the games industry was through the art route, as I grew up playing with 3D modeling software. I even studied Computer Animation at university before realising that words are my pixels and my pencil is... Well, it's still a pencil; what if I make a mistake that needed erasing?

This issue of Develop has an artistic bent. We've gathered together a group of fantastic freelance artists to take part in our Artist Showcase.
A directory of available painters, modellers, designers who you may consider hiring for your next project.

We love this idea of building connections between the games dev community, so it's likely you'll be seeing more of this in future issues.

We also have a big feature on Milestone, the Italian royalty of the racing genre. They've been around for 20 years and have recently taken a sliproad off the beaten track to the finish line and beyond.

> **We love this idea of building connections between the games dev community**

(Can you tell I don't play racing games?)

I've also delved further into my current obsession, which I touched on last issue with my feature on out-of-home VR.

How do traditional games inspire escape rooms, and vice versa? You can find out in this issue, and see the anatomy of a real live escape room.

Elsewhere in the industry, we're seeing Nintendo make a (don't call it a) comeback with impressive sales of *Mario Kart 8* on Switch. I'm happy to see continued passion for such a fantastic device. Get on that starting block and fire the go pistol, we're off to the races!

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"I AM GROOT"

As the latest Marvel blockbuster explodes onto screens, **Jem Alexander** contemplates the first episode of Telltale's Guardians of the Galaxy and the importance of Marvel making a strong return to games

Imagine my delight when I realised I had an excuse to write about *Guardians of the Galaxy Vol. 2* in my op-ed this month. A film with the strength of narrative and heart that, in my opinion, eclipses the first in every way. The Marvel production line remains in full flow and yet this film manages to stand apart from it. It's something fresh that isn't bogged down or contaminated by the rest of the *Avengers* mythos, and I speak as a fan of the Marvel Cinematic Universe and an unabashed Joss Whedon fanboy.

A hugely celebrated IP that is racy, spacey and Taserfacey. Colourful and fun. Heartfelt and intelligent. That's *so* video games. Which is why when I first heard about the Telltale Games *Guardians of the Galaxy* series, I was excited. *Tales from the Borderlands* was so, so excellent and *Guardians* feels like the natural evolution of that. I love what this studio strives for.

Storytelling is incredibly close to my heart and I firmly believe that the surface of games narrative has barely been scratched. We're at the tippy top of the iceberg. Just midway through the first 'b' of the beginning. Yes, I know there is only one 'b' in beginning.

But a story can only be as good as the technology supporting it. Right? As I type this, years of great game stories come to mind. Some featuring fully-voiced, motion captured animation. Some told through reams of text as 16-bit character sprites gyrate on screen. Stories that I love and characters with whom I've fallen in love and so I wonder why it is that isn't enough anymore. We're spoilt by the Uncharteds and the BioShocks and Mass Effects.

TELLTALE HEART

So it's jarring to return to the Telltale fold after ignoring *Batman* and *Minecraft* and *The Walking Dead: Season Three*. No slight on those games, I just had no interest. That's one of the great things about Telltale working with so many IPs; they cater to everyone, but not necessarily at the same time. But after two years of being away, it pained me to see a lack of evolution. I played everything from *The Walking Dead: Season One* all the way to *Tales of the Borderlands* and they all suffer the same issues.

The script for episode one of the *Guardians of the Galaxy* game is good, but there's so little support from the rest of the game to make this a true *Guardians* experience. It has heart and intrigue and powerful character statements, but they're coming from the flappy maws of dead-eyed puppets. Develop isn't about hating on developers, we're about celebrating the most creative industry on the planet, but my feelings about the importance of storytelling means I'm going to be more critical of those things I love that fall slightly short.

It's interesting to read about the history of Milestone (as you can in Sean's cover feature this month)

> **Tales from the Borderlands was so excellent and GOTG feels like the natural evolution of that**

where the studio heads discuss switching from an internal engine to Unreal. That ancient engine is what Milestone cut its teeth on. The studio figured out how racing games worked and created some of its most successful games on that tech, but they stuck with it for too long and it became like a millstone around the neck of Milestone, dragging it down. Now it is inventing proprietary technology to improve Unreal Engine's ability to deliver world-class racing games, because that's what the studio makes and that's what it wants to be the best at.

Telltale creates intimate,story-driven experiences that react to a player's choices and I want it to be world-class at doing that again. We live in a world where studios like Dontnod are aping the Telltale formula with *Life Is Strange* and doing it better. This need not be the case.

THANOS FOR THE MEMORIES

I'm still looking forward to the rest of the episodes of the *Guardians of the Galaxy* game. Telltale has done for episodic gaming what *Buffy the Vampire Slayer* did for TV. (Told you I was a Joss Whedon fanboy.) But I have another selfish reason why I wanted the *Guardians* game to be better.

Marvel has ignored games, or paid lip service to the medium, while competitor DC is bankrolling Rocksteady's much-loved *Batman* games. I want Marvel to see success in *Guardians of the Galaxy* because I want more Marvel games. By Telltale, by Crystal Dynamics, by Insomniac. By anyone else who knows they can make an amazing Marvel game that delivers on the gameplay and storytelling the Avengers universe deserves. I know there are a lot of you out there. ■

MUSICALLY **MATURE**

Sean Cleaver looks at Classic FM's new show and shares his view on how far video game music has come

Photo credit: Rose de Larrabeiti.

This Easter weekend we were treated to a new show on national radio station Classic FM. *High Score* is a radio show dedicated to video game music every Saturday presented by BAFTA winning composer Jessica Curry. This is excellent.

I won't use the word 'validation' but it's great that we are now in a position where games music is now in the mainstream. Classic FM has been incredibly supportive of game music and if you look at the comments on the stations social media during the shows, you'll see how well received it has been.

Game music can be iconic of course, but there's maturity around the genre now. The technology has improved so much in both games and music production and with that has come amazing advances in how developers approach music.

Many people have fun, nostalgic memories of 8 and 16-bit music, but we often forget how much of a part the compact disc had to play in the evolution of what we listen to.

One of my first memories of great music in video games was *Dune*, the 1992 game by Cryo Interactive. It was a deep, rich soundtrack that had amazing audio quality both on PC and the Sega Mega-CD release.

Five years later, and as electronic music technology grew, *Final Fantasy VII* would bring us Aerith's Theme by legendary composer Nobuo Uematsu. The increase in available sound channels on PlayStation paved the way for CD quality music. The soundtrack's 2004 re-release hit number 3 on Japan's Oricon charts and the Final Fantasy Distant Worlds tour is currently underway, celebrating 30 years of the series' iconic music.

Budgets have increased, allowing for games to license tracks from record companies, alongside original composition. Whenever I bring this up in conversation, *FIFA 98* is often cited for using Blur's Song 2 as its title music, along with the collections on various *Grand Theft Auto* releases and critics praised *Mafia 3* for its 1960s popular music soundtrack.

If there's one thing people will do when you mention the cultural importance of games and video gaming, it's to question the idea of relevance and that notion of culture. 'If games are so important, what have they ever given for our culture,' for example. I would argue that video games heavily contributed to the nostalgia for late 20th Century music that all generations currently enjoy.

I wonder how many people know songs from the 80s thanks to *Grand Theft Auto: Vice City*, who otherwise would not have cared? Reinventing and rebooting has been a bit of a theme for creative industries.

But what of the original music composed for games? This too has expanded exponentially. You only have to look at the list of names to see the incredible talent working in games. Names like Clint Mansell, Michael Giacchino, Danny Elfman and Hans Zimmer help to popularise it, but it opens the door for composers like Austin Wintory, Jason Graves, Mick Gordon, Akira Yamaoka and many others to create incredible music.

Jessica Curry's score for *Everybody's Gone To The Rapture* is an excellent example. **(spoilers ahead)** There's a scene where Lizzy is at a train station and leaving a phone message for Steve, the astronomer who discovered a mysterious signal which is spreading throughout the village of Yaughton and killing its residents. She's about to leave, pregnant with his child and saying her goodbyes, explaining that she's ready to start a new life, only to end the conversation by noticing the planes that Steve has ordered in an attempt to gas the valley and stop the signal spreading. The musical cue that follows is not a dramatic sombre piece but a positive motif in a major key that celebrates the fact that Lizzy finally chooses a new life. The effect is bittersweet, though, and your heart leaps out of your chest, streaming tears from your eyes. **(spoilers end)** It's a moment that shows that the music doesn't need to match the visuals on screen, like film, but to reflect the journey and the interaction a player has had with this virtual world. That's an incredible thing.

> **I wonder how many people know songs from the 80s thanks to Grand Theft Auto**

I spoke with Jessica Curry back in January and she told me one of her favourite pieces of game music is Clint Mansell's Leaving Earth from *Mass Effect 3*. It's a great piece and it demonstrates where the genre is now. It's not the unwanted electronic brother of film. At times it can do things that film cannot, combining what you see and hear with player agency. And now, we get to hear the best examples of this every week on the radio – how far we have come. ■

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A NEW MILESTONE

Not only has the studio changed engine but it's been a full service for Milestone over the past five years. **Develop** sent **Sean Cleaver** to check out one of the biggest, and perhaps riskiest, evolutions in racing games development

Where the older, historical part of Milan gives way to the newer, modern buildings and offices, you'll find the offices of Milestone. On the street of Via Olona, you can turn one way and see the walls and buildings of the Università Cattolica del Sacro Cuore, the terracotta roof tiles and the spires of the Duomo di Milano. Turn the other, and you'll find the newer tenement blocks, the offices and the science museum that has a Cold War submarine, the Enrico Toti, sitting outside it.

Milestone is at a turning point as a studio. Over 20 years, it has established itself as a racing game developer. Heavy investment in technology and expansion of licences and IPs are seen as the next step. Just as the studio sits between the old and the new in Milan, it hovers between its history and its future and the team is ready for the risks ahead.

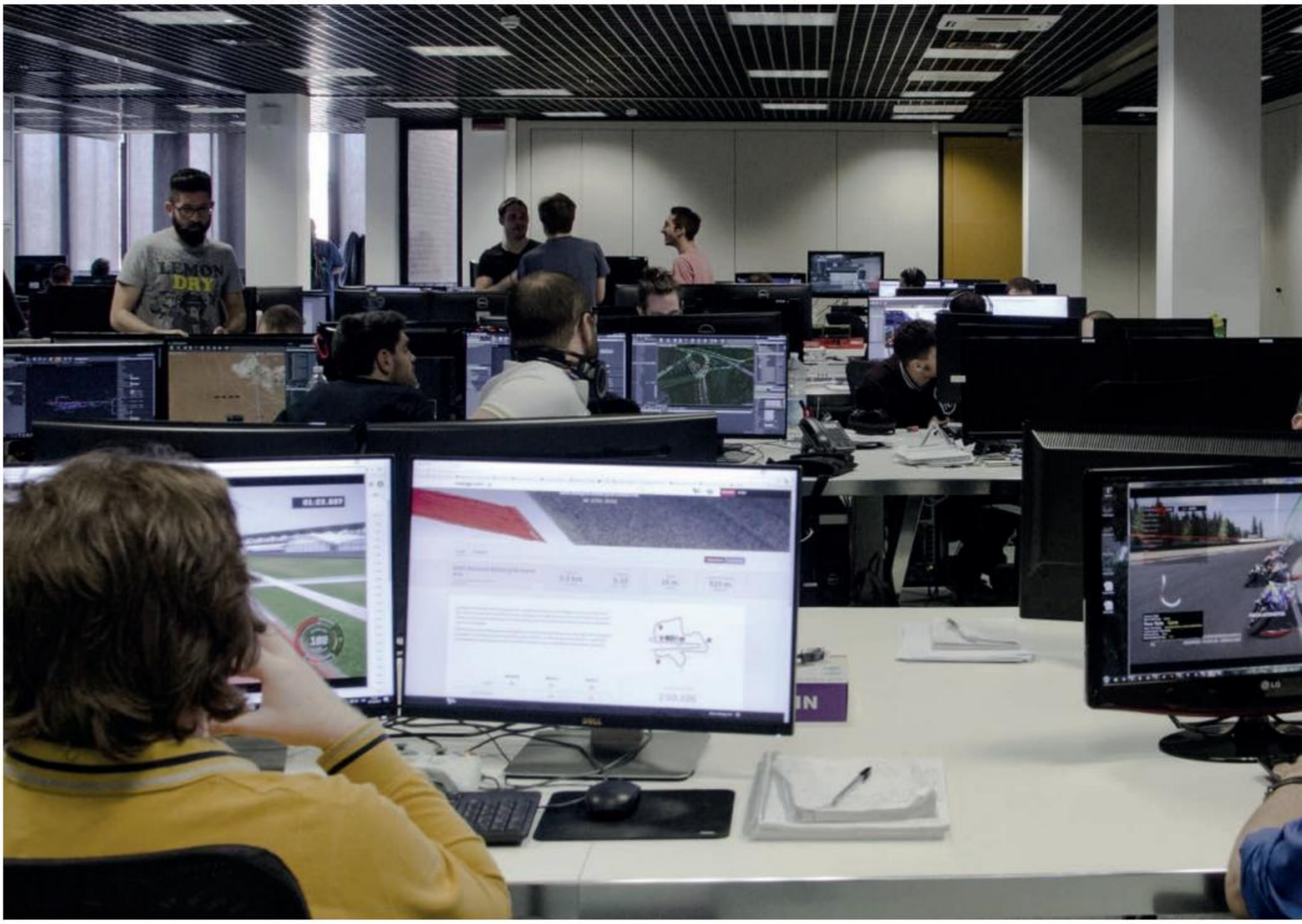
> **Milestone is at a turning point as a studio. Over twenty years, it has established itself as a racing game developer**

The studio is renowned for its experience in racing game development. However, beyond its notable game releases and the notoriety such experience brings, not much is known about the studio outside of its native Italy.

Now Milestone is expanding, trying to build new IPs on top of its established licensed franchise entries, and looking to future proof its technology with Epic Games' Unreal Engine. Milestone wants the world to know who they are.

The studio isn't just looking to show off the improvements that come with a new engine, but a whole new ethos. One of the things you'll hear a lot if you speak to anyone from Milestone is that the company has undergone a reinvention that was like starting from scratch. A change in upper management has seen a switch from relative comfort and satisfactory returns, to greater risk and even higher reward.

20 years is a long time in the games industry. In order to appreciate Milestone's plans for the future, we must first look to its past.



HISTORY

The studio originally started out under the name Graffiti in 1994. During that time, the studio released a game called *Screamer*, an MS-DOS racing game that brought the same style of arcade racing that the Sony PlayStation and Sega Saturn were offering at the time. The series grew with the release of *Screamer 2* and *Screamer Rally* as Graffiti became Milestone in 1996, and the games moved away from the arcade styling to the more simulation based titles that the studio is now known for.

The first licensed game came in the form of *Superbike World Championship*, published by EA. It was Milestone's first foray into the world of motorbikes. For the next few years, the company concentrated on this until entering a partnership with Infogrames and starting to develop games specifically for consoles.

At this point, Milestone was gaining notoriety as a racing game studio and also started to take on work-for-hire projects.

> **We have to invest in technology. Technology is the core of a video game**
> *Irvin Zonca, Milestone*

Licences from Alfa Romero and TV show *The X-Factor* all helped, although the team itself stayed relatively small. The team also managed to continue its work on superbikes with *SBK 07* and started working with *MotoGP*.

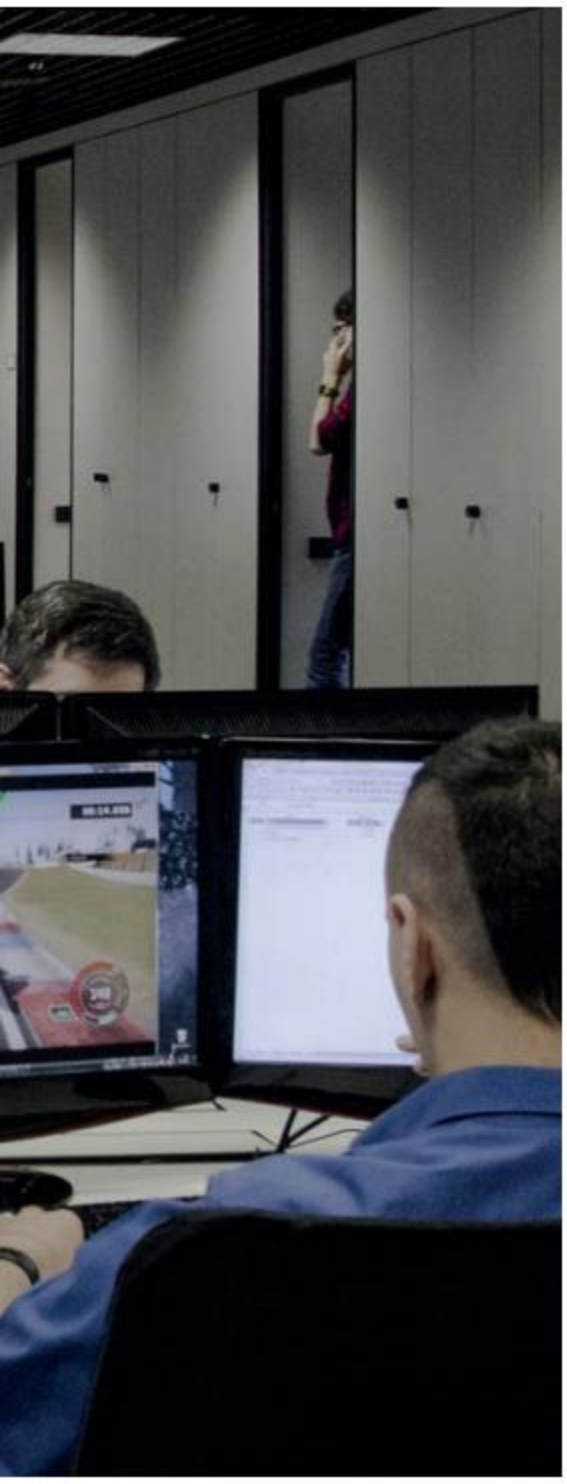
At this point though, Milestone was beginning to hit problems. A big leap was about to be made with the next generation of consoles, the Xbox 360 and the PlayStation 3. Milestone, like many other studios at the time, found that developing for these new machines was a struggle.

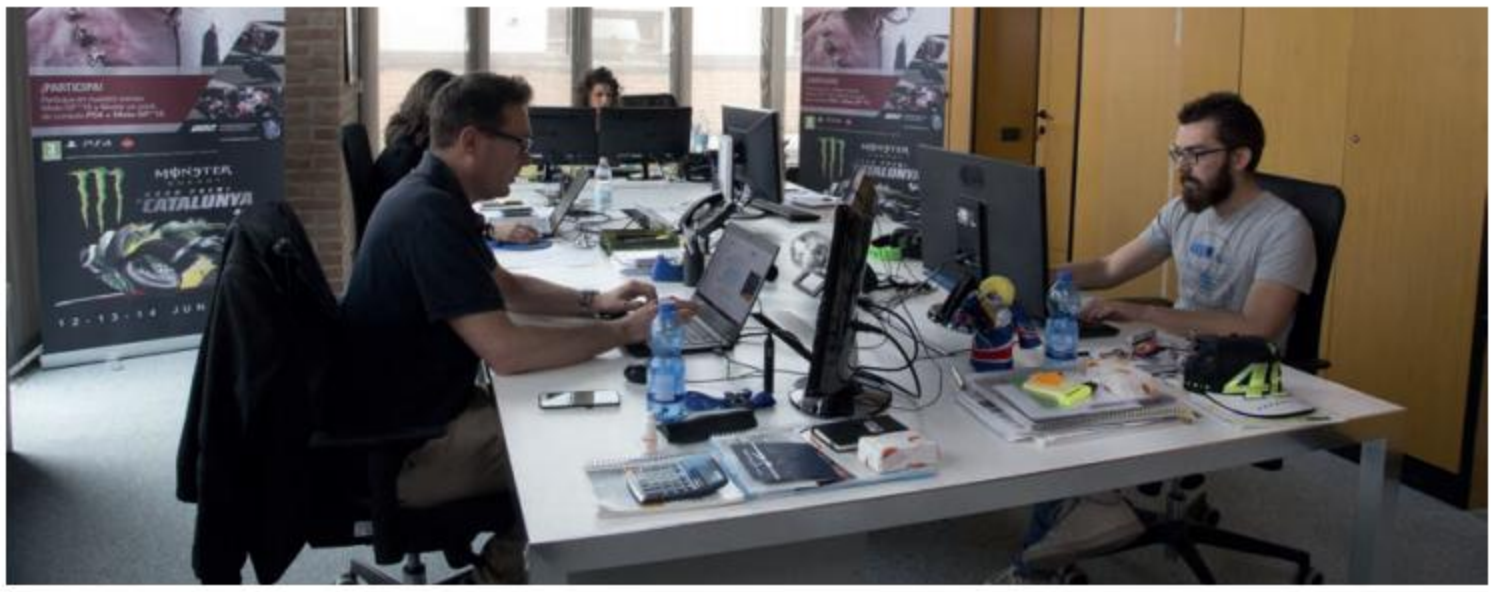
Despite the teething problems the studio experienced, Milestone took on new licences and returned to four wheels with *World Rally Championship* in 2010.

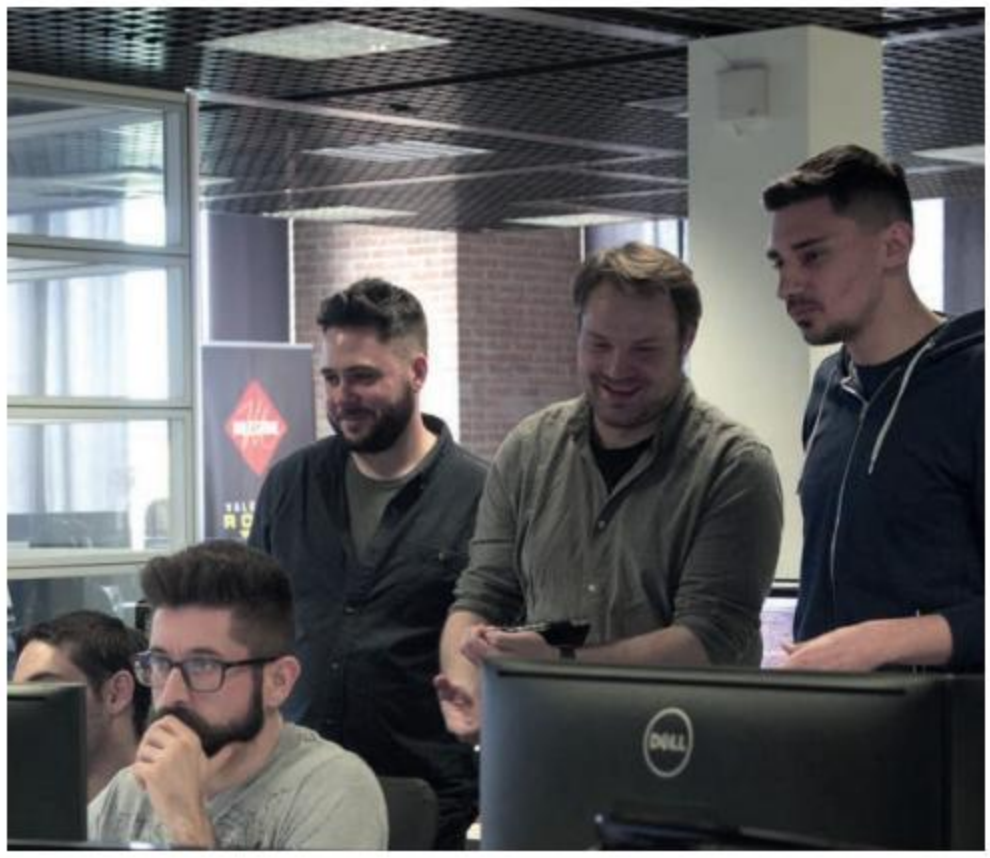
The R&D department worked on building and honing the engine that had served them for many years. But the quality of games the team was delivering was, on reflection, not what it could have been thanks to the limitations of the engine. The company is now very honest that the management vision at the time was constricting the studio's ability to deliver that quality.

Irvin Zonca is the head of game design at Milestone and has been at the company for 12 years. Develop spoke with him last month about the switch to Unreal Engine and the challenges it brought to new IP *Gravel*. This time, we're talking frankly about the studio's history. We start with the biggest change he's seen during his time at the company.

"It's probably been the management," Zonca explains. "Because until five years ago we had another manager. I was just the head of a very small group of gameplay designers, just three or four people. The former manager wasn't thinking big enough. He was just reiterating what we were doing, he wasn't considering







(L-R) Irvin Zonca, Ivan Del Duco, Luisa Bixio, Andrea Loiudice

expanding the company. He wasn't considering taking risks, and so on. So, everything was quite plain. It was not easy at all, but we had to ask ourselves, 'Where are we heading? What do we want to do? Do we want to keep up with our competitors or not?'.

"The first iteration of our engine is from back in 2010," Zonca says. "It was already the child of a previous one that was created years before. It was an engine that was getting old in almost every way. We couldn't create open worlds, the shaders were not great. It was quite old. Not flexible at all. It was okay for 15 years ago, maybe not even for ten years ago, but we talked with them and we said, 'We have to invest in technology. Technology is the core of a video game'. So this was the key, but the manager wasn't listening to us. He wasn't eager to impress our customers."

One of the founding members at Graffiti. Ivan Del Duca, stayed with the company until 2001. He's not long returned to the company as a technical director, but while he was working elsewhere he was becoming dismayed at the products that Milestone was producing. "When I was external to the company, I was a bit worried because there has been a period where I was not quite satisfied as a gamer by the products that Milestone made," he tells me. "And this was one of my fears before returning to Milestone. Would I have the opportunity to make some changes to improve the quality?"

GROWING UP

Luisa Bixio is the vice president of Milestone. She has worked for the studio for over five years, starting as a commercial manager. As the company has evolved, she has been front and centre in creating a new, better Milestone. Growth is clearly an important goal for the future.

"We want to be in business," Bixio says. "To do that we have to change and we have to get better." They say you have to speculate to accumulate, and Milestone is speculating heavily indeed.

Licences have been a big part of Milestone's work over the past decade and that looks likely to continue. *MotoGP*'s latest edition is coming soon and *MXGP* is about to have its third entry released, having been moved to the Unreal Engine.

But there are more projects in the pipeline and Milestone is keen to expand with its own IPs, like *Gravel*.

This desire to grow has seen a lot of hires within the company, expanding to gather expertise in Unreal Engine, and to help with their own R&D in creating bespoke solutions for the needs of the racing genre, like physics and AI.

This is vital, given the nature of some of the licences like the annual *MotoGP* game, which is licensed from parent company Dorna.

Walking around the studio, you see a few different indications of the studio's past. You'll find posters of recent releases and even a room full of framed game discs, going as far back as the PS1 days. But aside from that, you won't find any nostalgia for that past anywhere else in the company. There is a pride in what Milestone is creating, and an acknowledgement in what it has done, but beyond that, the company is focused on its future.

Milestone sits on the fourth floor of its office building, but the majority of development is done in large, open areas. Most of the team sits in two of these areas and are divided into different aspects of the game design process. On one bank of desks, team members are experimenting with world design tools. On another, there are tests on vehicle physics, with many on-screen graphs showing the realtime physical load for suspension on a certain terrain change. Then there are other desks working on the likes of terrain deformation, programming AI patterns and testing tracks to make sure the cars and bikes are responding as they should be.

Working together is vital for teams that are using new tech, as everyone can help and learn from each other. But for all the negativity that the team said they felt in the past, this all feels positive. Everyone here not only looks happy, but seems excited about the projects they're working on.

> **With Unreal everything changed. We started from scratch, basically. But we didn't have a huge amount of time to do this**
> *Ivan Del Duca, Milestone*

U-TURN

Irvin Zonca puts this new direction and positivity down to the change of management and the introduction of new technology. "Five years ago we had a change in management, and I was made head of game design," he says. "We had other people with us and we were given the objective of investing in technology. Putting new ideas on the table. Making the company grow. And I think that this is working. It's not easy. We started five years ago to look for new game engine and we decided, 'Okay this game engine is not good'.

"We knew this for years, that we wanted to change. Five years ago, it was impossible for us to create a new engine by ourselves, because game engines are very big. It was not possible to stop game development for a new engine, because we didn't have the money to just focus on R&D.

"We had to wait for the stars to align. Epic was ready, we were ready. We found new people like Ivan Del Duca, who is our head of development, and he's been here for less than two years, but he arrived to work with Unreal Engine 4.

"So it was the right time, and we started working on new pipelines with the engine. Five years ago we were making €2 million a year. And now we are making €28 million. This means that we were able to start the growth that we were planning. It's not easy because we're building the elements for the engine and we can't stop developing games."

Although it's a challenge he enjoys, Zonca does struggle to get the team working together as he hopes they would. "I know it's quite strange because usually if you put a

bunch of people who love video games in a room they will gather together and start speaking out loud, making noise about what they like," he explains. "The problem is that here we are all passionate about racing, and games in general.

"When you start working on a specific asset, on a specific feature or something within that line, you focus on what you're doing. It's not so natural to talk with other people, to look at what other people are doing. If you put some developers into a room, they will focus on their work without talking to each other. It's quite strange, but it's what happens in development.

"So we really need to push people to talk with each other, to see what other people are doing. We prefer to have open spaces and all the doors open in order to push people to look at other monitors. Sometimes, I'm walking through the office, and I see something on a monitor. I stop and I talk with the person, I ask questions and they explain it to me. I give feedback. It's crucial, it's fundamental to make people work together, especially when you're working on an open world game."

Ivan Del Duca was brought back into Milestone because he has experience with Unreal Engine, but he also knows the company. "I'm very happy with the results of all the work we did in the last year," he says as we discuss the upcoming final phases of *MXGP 3's* development in the engine.

"We started emigrating technology out to Unreal Engine and it's very, very different from what we had. We had some custom tools and the technology was tailored around them. This means that the production was very well known from every point of view by all the team members. And we knew exactly how much time we would need to make a new game, to make a new chapter of a game, and so on.

"With Unreal, everything changed. We started from scratch basically. But we didn't have a huge amount of time to do this. I'm in charge of the R&D department and we worked for about ten months to write the technology that was built to integrate and expand the possibilities of Unreal Engine. Unreal is a generic engine. You can do whatever you want with it.

"Vehicle physics is one of our most important pieces of technology. We rolled this into the core technology to expand the possibilities of Unreal Engine and then we started with *Gravel,* but in the end we decided that maybe the first title should be *MXGP 3*, being a bit smaller and something that we knew better. *Gravel* is a new experiment for us. We want to return to our origins, maybe like *Screamer*, and try to bring back those kinds of gaming experiences."

PRIORITIES

Gravel is Milestone's first new IP in a long time and it's something that they are very passionate about. Not just because of the excitement behind doing something new, but what it signifies for the studio. A fresh new direction after a reinvention of the company.

So, it may be a surprise to see the team talk so candidly about it and the development process. But, as it is for anyone who creates something new, *Gravel*, *MXGP 3* and the Unreal Engine created a very difficult but necessary learning curve. Which is why *MXGP 3* will be the first release and the priority for development within Milestone for the time being. While the project is less time intensive compared to *Gravel*, things haven't been as smooth as expected, despite some elements becoming much simpler.

"It's easier in two respects," explains Del Duca. "One aspect is because we know exactly what we have to do. It's easier to divide all the tasks, the features that we have to write and test and submit to the platform holders. We are at the third chapter of *MXGP*, so we know how to do it and we know what we need to improve. But *Gravel* is an open world game. It's massive. While *MXGP* is a bit smaller, it is based on smaller circuits, smaller tracks. It has a lot of stuff to go on, but compared to a bigger title like *Gravel* it has been the right choice to focus on *MXGP 3's* development with the new technology.

"But, to be honest, we had to change something during the development of the game. During the development of *MXGP* and the development of *Gravel*, we found that something that we planned wasn't the right choice, or something we implemented wasn't the right thing to do, and we had to change during development. This caused some problems, but the good thing is that using Unreal, we have Epic supporting us. This is a huge change for us."

While Milestone is learning about the engine, Unreal is learning what it is missing, like car physics and driver AI, for more varied projects that Milestone is capable of creating bespoke solutions for.

"Working with a shell technology is an incredible feeling because there are thousands of people working on the same things, and they can help you. They can give you advice and also, I'm not just talking about other companies, but also

single developers, they use Unreal Engine. They write nice plug-ins. You can see it and you can say, 'Oh, it's something nice and something cool'. You contact him and include his or her technology into your own game, something that was impossible with your own technology because it was something that was unable to be implemented into our engine."

This road trip has only just begun for Milestone, and it's taken over 10 years for the studio to change its management and its mindset approaching game development. The road looks set to lead the studio to some interesting destinations.

GREAT EXPECTATIONS

With all the excitement around Milestone, expectations may be high, but the reinvention has seen some very open and honest reflections.

"Everybody was excited to do new things to unleash creativity," explains Zonca. "And I have to say that it was very positive. This last year has been very, very positive. The team was really happy because it has been given the chance to push more of what we did before.

"Every time a new console is released, Sony, Microsoft, and Nintendo change all the TRCs (technical requirements checklists) before going to submission, so you need to relearn everything. Think about the new functionalities of the dashboard or new trends in game design. You have to keep learning if you are working as a game developer. So it's not something that scares us, it's just a reality. This is why we were happy about changing the game engine, because it was better. Nobody cared if we had to learn new things."

> **We want to be in business. To do this, we have to change and get better**
> *Luisa Bixio, Milestone*

Zonca and his team are very honest about their journey to developing *Gravel*. The team at Milestone are all racing fans, and have put a fair amount of hours into playing the competition, like *Forza Horizon* and *The Crew*.

But this is coupled with an honest appraisal of what the team can do. This is the studio's first open world project and they know there'll be a lot to learn from the likes of *Forza Horizon* that have been iterated upon for over half a decade.

"We know how other people made that," Zonca explains. "I don't think that when you do something for the first time you can be as good as other people. As this is the first time we've made an open world, it wouldn't be fair to say that it will be the best open world. I don't think so.

"It's the same thing when we talk about the motorcycle game market. There are very few developers that create motorbike games because it's very difficult to create the first one. And you really need some years to go through all the problems with physics, animation, and so on to make a good one.

"I don't believe people who say, 'This is our first effort. We've already made everything that we wanted to do. Everything is perfect.' It's not. It can't be. This is why we try to avoid some traps when developing it. So, for example, we didn't originally set *Gravel* up to be an open world game, but we put some open world maps into the game we had.

It was a good step to start from in the beginning, to start working on open maps, giving the player the chance to do something. But if you want to trigger events, you need to have a storyline that will develop [narratively] with cutscenes, and so on. It would really have been too much for us to start with. So we wanted to start with applying some limitations to the game design, and then focusing more on the open world features."

Everyone at Milestone knows that this is a gamble, but it's arguably a sensible gamble that could benefit the studio and the Italian games industry as a whole. More jobs, more skills, more training and experience. Milestone, of course, relies on the Unreal Engine now, along with Epic's support of it. But the forecasts are up, the licences are continuing and new licences and projects look set to be unveiled in the future.

"It's not easy to restart doing what you already did in a totally different way," admits Zonca. "But when you master it, you're better. You can do better things. You feel great. You feel more like the competition, and so on. But, at the very beginning, it is very difficult.

"We looked at this as a good and positive thing. We bet on growing. We bet on Unreal technology, and we bet on people that we took on board. It's working, but we weren't sure, honestly, that it would. Because one major mistake and we are fucked. But we gamble and, for the moment, we are doing well." ■

DEVELOP: BRIGHTON SNAPSHOT

The first wave of Develop: Brighton sessions are now locked in and already some big names are included in the show listings. Here are the sessions we're most looking forward to seeing in Brighton this July

Joining Up The Dots - Creating Games With An Integrated Art Style, Ethos & Identity

Track: Art

Rex Crowle (Foam Sword) discusses creating games which fully integrate the artistic style, with its gameplay and brand.

Rex demonstrates his process using example titles from his career including *LittleBigPlanet* and *Tearaway* as well as his new title, *Knights And Bikes*.

Takeaway:

This session aims to break down the thought-process behind creating a new intellectual-property, that stands out visually and mechanically. Attendees should come away with new ways to think creatively, and tips on creating imaginative, but cohesive games.

Speakers:
Rex Crowle - Foam Sword

Tetsuya Mizuguchi: Beautiful Dream

Track: Business

Few developers can boast so varied a CV as Tetsuya Mizuguchi. In his 27 years in the video games business he's designed hydraulic-powered arcade cabinets, crafted classics such as *Sega Rally*, taken the music-game genre to ludicrous new heights with *Rez* and *Lumines*, and is currently pushing at the boundaries of virtual reality.

With the help of *Edge* editor Nathan Brown, Mizuguchi will look back on a remarkable career, from his early days in Sega's arcade division right up to his current work at his new studio, Enhance Games.

There'll be a glimpse of the future, too, as he shares his thoughts on what virtual, augmented and mixed reality can offer games as a whole.

Speakers:
Tetsuya Mizuguchi - Enhance Games
Nathan Brown - Edge Magazine

A Story in Games (and Other Optional Extras)

Track: Design

Dan Abnett is a novelist and comic book writer, but he's also worked extensively on games projects such as *Alien: Isolation* and *Shadow of Mordor*.

He was approached and hired because he was a writer, not because he was especially games-literate. Dan talks about the curious attitude to 'story' that he encountered, and suggests how concepts of story might take a more prominent role in the development of new games.

Takeaway:

To provoke new thought for 'story' in games, and to make seasoned games professionals reconsider how story can be integrated.

Speakers:
Dan Abnett - Novelist & Comic Book Writer

Programming Social Features with No Money

Track: Coding

Server costs can kill a feature. Developers often need to develop online features and social functionality on a shoestring budget with no server support.
Learn to build a player ghost small enough to fit in a leaderboard. Implement a player trading system with no server and breathe life into your world using big data. All with no hosting costs.

Takeaway:

- 3 Practical examples of building social features
- Some tricks to dev social on a shoestring
- How domain specific compression boosts networking

Speakers:
Claire Blackshaw - Sony Interactive Entertainment

Interactive Music Masterclass: Designing A Contextual & Scripted Music System

Track: Audio

In this talk, Jeremie will walk through the challenges BioWare faced in designing one holistic music system within the Frostbite Engine.

The key focus was to build a system that could handle both a contextual, player-driven procedural system - and a more traditional scripted system for linear experiences.

Jeremie will cover the breakdown on how each element was designed and implemented, as well as how the system interacts with itself to achieve a seamless musical presentation.

Takeaway:

Expert level videogames music systems design know-how.

Speakers:

Jeremie Voillot - Bioware

The Beautiful Game: What eSports Can Learn From the World of Football?

Track: Evolve

eSports is an exciting sector that is on course to become a billion dollar industry. Despite its rapid emergence, the space remains frustratingly difficult to understand. We will look at the most successful sport in the world and use its success as a starting point for a discussion of challenges facing the industry.

Speakers:

George Osborn - Go Editorial

Funding Your Development Journey

Track: Indie

Entrepreneur Tanguy Dewavrin reviews the different types of funding you can find at each stage of your studio's journey.

From concept to pre-production to the different milestones to release of your game, and beyond. He'll share his experiences of the various types of finances you can get at each step of your game's development.

Speakers:

Tanguy Dewavrin - Atom Republic

For the full programme listing, head on over to the Develop: Brighton website at www.developconference.com

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DESIGNING FOR PROS

As the esports business booms, developers face tough new challenges. Esports Pro's **Jake Tucker** discusses ways developers can make a smoother transition to the world of competitive gaming

Research outfit SuperData Research estimates that esports, as a business, will be worth $1 billion this year. People are now watching more hours of esports on Twitch than TV programs on Netflix, Hulu or HBO. As a result, football teams are taking big steps into esports and signing professional gamers, while fans are filling out stadiums around the world on a regular basis to watch their chosen teams clash.

For enthusiasts of the games that are rapidly turning into the digital equivalents of sports like football, this is great. For the developers? It's an incredible opportunity, coupled with a near unlimited source of income. Understandably, this means that many games studios are trying to "create an esport". With varying levels of success.

However, many are finding that without the budgets and talent of top-tier studios like Blizzard, Valve and Riot, building a cohesive competitive scene around your games is a tough proposition. So, while you can't design an esport, you can do your utmost to try and foster a competitive community for your game to ensure a greater chance of success.

BALANCING ACT

Long gone are the days of fire-and-forget releases, with games launched into the ether and then promptly ignored by developers and publishers until an expansion pack was due. Fans of most games now demand post-launch support, but nowhere is this more essential than in a nascent competitive scene, where players will be actively trying to find loopholes and exploits in your game.

No matter how good your designers think they are at balancing, when competitive players start theorycrafting around your game, they'll find the one weapon, skill or technique that's slightly more effective than the others, and it'll be adopted rapidly by the rest of the community.

That's where you step in. Balancing a competitive game is a long and drawn out process, which could infuriate console and PC developers used to supporting their game for a few months, but mobile developers might find the process eerily familiar. New content and repeated tweaks are essential to keep your game healthy, in addition to fixes for any particularly heinous exploits.

But you don't need to patch every unexpected thing because...

WORKING OUT WHAT TO FIX IS HARD

Sometimes fixing bugs and glitches immediately is essential, and sometimes it's better to leave the unintended feature in the game. Especially if it's become a part of the metagame, otherwise you might attract the ire of your community. Similarly, failing to repair something that the community views as an essential fix will also see you catching flak, often from the exact same group.

Prioritising what to fix and deciding which unexpected behaviours to keep is one of the most difficult aspects of designing a competitive game. Having a designer or game director that can listen to the needs of the community without giving in is essential, and the choices are simple: take for example *Call of Duty*'s recent hassle with 'snaking': an *Infinite Warfare* patch in late April tackled several smaller problems but didn't address the community's biggest hot button issue with snaking, a process by which players will mash the prone button repeatedly to stand up and lay down.

Without a fix, the community was incensed.

COMMUNITY IS ESSENTIAL, BUT NOT ALWAYS RIGHT

Any upset that catches on with the wider community is potentially disastrous, and having a community manager or community developer in your team to put forward your ideas is key to help a game grow.

This is a strategy that worked well for Ubisoft Montreal's *Rainbow Six Siege*. The team has two community developers and a community manager on staff that work around the clock monitoring the game's subreddit. They have to keep an eye on the place to make sure they're representing the best interests of the players. After all, these are the people who are going to be watching your fledgling competitive game as it becomes a world-famous esport. They'll be your future commentators, players and enthusiasts. You might only get one chance to screw up, so try your hardest to always do your best by the community.

Game communities can be vocal if they're annoyed at something, no matter how minor it seems. This can mean that around all of the outrage, it can be difficult to pick up on what is a real issue, and what is just a perceived imbalance: "Tracer keeps killing me, please nerf her" isn't actionable, but could be repeated as loudly on a game's forum or

subreddit as genuine issues, like "Tracer's hitbox appears to be inaccurate, and here's the evidence".

Filtering out what is worth changing is a tough thing to grasp from just community feedback, but it can be a good indicator of potential issues. If you want to get to the heart of the problem, you'll want to use data.

TRACK EVERYTHING. YES, EVERYTHING.

Good analytics are invaluable in modern development to see where players are encountering bottlenecks, what aspects of the game are popular and indeed what is driving your players to spend money on DLC or quit the game in frustration.

For your currently hypothetical but definitely world-beating future esports title, you'll be wanting to go a lot deeper than that. Tracking where fights happen in the game's maps, where players are encountering each other, how and when interactions with objectives are taking place. All of this can help you get an accurate picture of what's actually going on in your game.

If we've already established that your game is always shifting, and that your community is your most essential part, you could almost see those playing your game as a sort of QA department, feeding back information on which characters and weapons are powerful, and letting you see what effect your changes are having on the game's audience.

BE UNIQUE

Yes, esports is a billion-dollar industry. However, it's largely carved up between the heavyweights. You won't be able to build a MOBA to compete with *League of Legends* or *Dota*, many have tried and failed to topple their monolithic presence. Similarly, try as hard as you might but you'll struggle to make a shooter to compete with *Overwatch* or *Counter-Strike: GO*.

> **Creating an interesting setting can go a long way to getting people invested in your game**
> *Jake Tucker, Esports Pro*

Luckily, the solution is as simple as making a game with a completely unique central mechanic. *Easy*. A good example is *Heavy Metal Machines*, the Brazilian MOBA currently being built by developers Hoplon, where everyone is in a car. With a core focus on speed, it's totally unique to play, offering a different experience to the other titles established on the market.

You don't have to reinvent the wheel here, you can just spray it a different colour. Many games are well established in their own niches, so you have to come up with a compelling reason why people might choose your game. Picking up a popular license could help for a mid-level developer, while smaller indie studios could try to hang anything off of one big central hook.

Similarly, creating an interesting setting can go a long way to getting people invested in your game.

Compelling lore and a game world with depth isn't just for single player games anymore. ■

Jake is the new editor of Develop's sister site, Esports Pro. For news, analysis and other mutterings on esports, head to www.esports-pro.com

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Romero Games

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Ken Perlin,
Dept of Computer Science, NYU

TETSUYA MIZUGUCHI: BEAUTIFUL DREAM
Testuya Mizuguchi,
Enhance Games

Joining Up The Dots - Creating Games With An Integrated Art Style, Ethos & Identity
Rex Crowle, Foam Sword

Interactive Music Masterclass: Designing A Contextual & Scripted Music System
Jeremie Voillot, Bioware

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Marcella de Bie, Streamer, Nysira
Tim Mines, Streamer, Spamfish

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Alex Moyet - AMCADE

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Challenging Conventions In Search of a Better Game
Liam de Valmency, Media Molecule

The Impact of User Behaviour on Social VR
Clemens Wangerin, vTime

Funding Your Development Journey
Tanguy Dewavrin, Atom Republic

I love coming to Develop:Brighton it's a great chance to network, tell people what you're up to, have meetings, do business deals.. also go to some great talks from some of the best speakers around. I can't imagine not coming.

Patrick O'Luanaigh, CEO, nDreams

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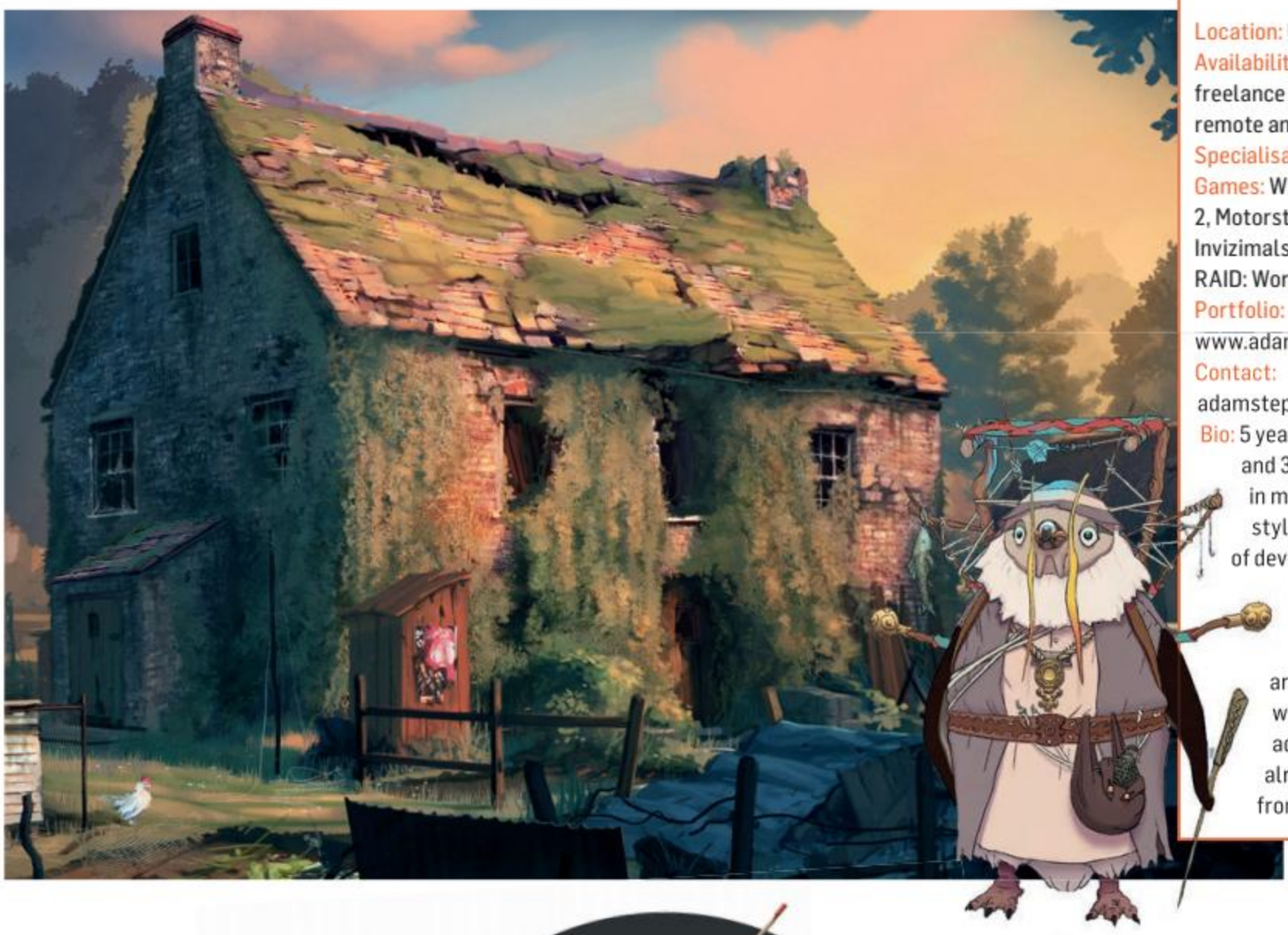
ARTIST SHOWCASE

Looking for a freelance artist for your next project? We've brought together a collection of freelancers, some established and some still studying their craft, for developers to easily find someone new to work with

Claudia Gironi (Wisesnail)

Location: London, UK
Availability: From June 2017
Specialisation:
2D illustration and concept art
Previous work: Cover illustrator for Highlander: The American Dream – IDW Publishing
Portfolio:
http://wisesnailart.deviantart.com/
Contact: wisesnail.art@gmail.com
Bio: Claudia Gironi, aka Wisesnail on the web, was born in Italy in 1985, but currently lives and works in London. Japanese Language and Culture graduate, Schiele enthusiast and art lover, she decided to teach herself digital painting five years ago - since then she has never abandoned her stylus. A huge fan of atmospheric landscapes, portraits and colour explosions, she mainly works in Photoshop, combining the versatility of the digital approach to the expressive brushstrokes of a more traditional method.



Adam Clark

Location: UK
Availability: Available for freelance and contract work, remote and in-house
Specialisation: Concept art
Games: Wipeout 2048, Killzone 2, Motorstorm Apocalypse, Invizimals: The Lost Kindgdom, RAID: World War II
Portfolio:
www.adamclark-art.com
Contact:
adamstephenclark@gmail.com
Bio: 5 years in house experience and 3 years freelance, working in multiple genres and styles. Worked at all stages of development, on pitches, prototypes, production and marketing art, as well as assisting on art direction. Experience with integrating and adapting to projects already under development, from triple-A to indie.

Alan Blackwell

Location: Adelaide, South Australia
Availability: From May 2017
Specialisation:
2D concept art.
Games: Transformers Battle Tactics, GI JOE Battlegrounds
Portfolio:
http://www.alanb-art.com/
Contact:
alan.blackwell@live.com.au
Bio: A freelance concept artist living in Adelaide, South Australia. Alan loves taking ideas from rough sketches through to final designs. He loves drawing robots and other mechanical things. Alan has worked in Vancouver, Canada in mobile games and also had the opportunity to exhibit his work in Geneva Switzerland. He is working hard to expand his skillset to include 3D production.

Alice Duke

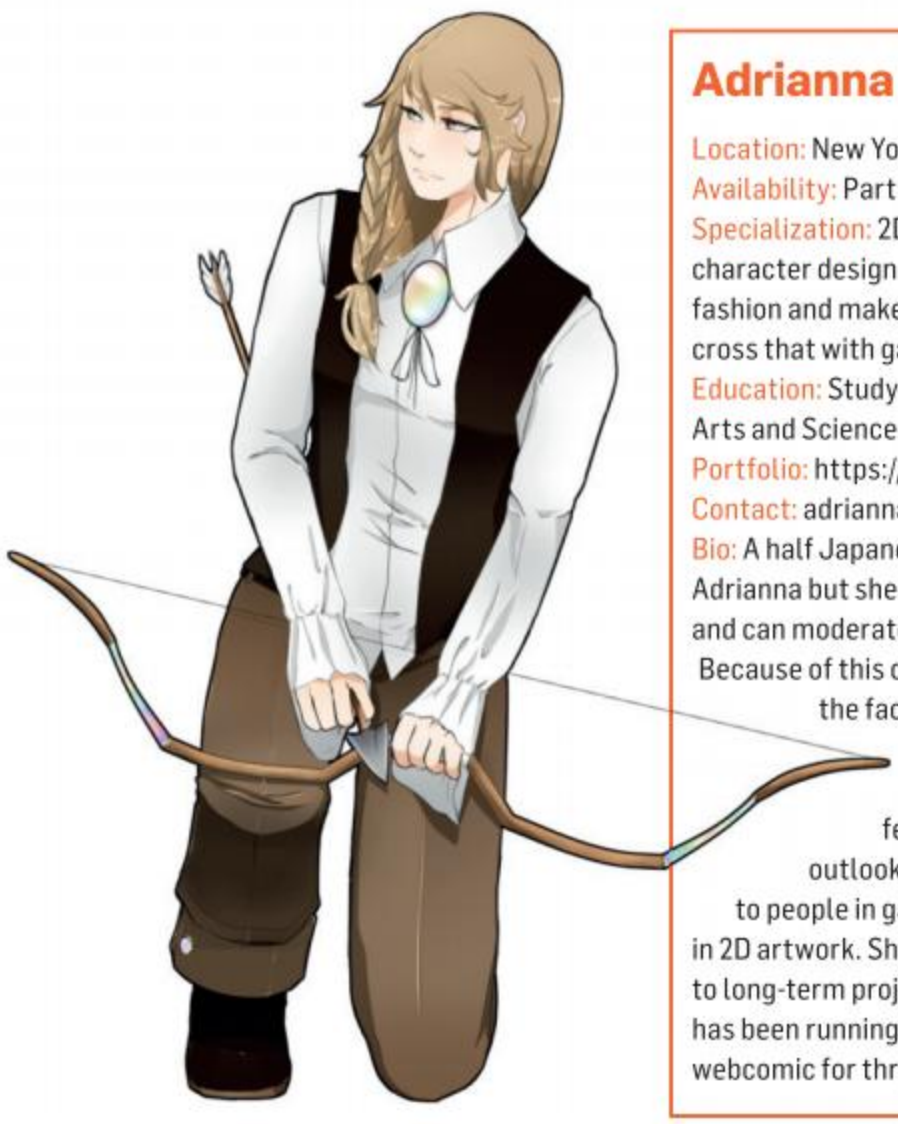
Location: London, UK
Availability: Available for freelance and contract work, remote and in-house
Speciality: Concept art, illustration and 2D art
Games: Fantastic Beasts: Cases from the Wizarding World, Jacob Jones and the Bigfoot Mystery, Invizimals: The Lost Kingdom
Portfolio: www.alice-duke.com
Contact: alice.naomi.duke@gmail.com
Bio: Alice has ~3 years in-house experience and 9 years of freelance across various disciplines. She's worked at all stages of game development, from pitches and early concept art through to finalising in-game assets and marketing materials. Outside of game dev she has worked in comics, TV, editorial/book illustration and marketing campaigns.

Alix Briskham

Location: UK
Availability: From May 2017
Specialisation: 2D art, UX/UI, texturing , Unity and Tilt Brush drawing (for live events etc)
Games: Salvaged, GNATs Island, Adventure Time's I See Ooo, Corrupt Cup Contest
Portfolio: www.alixbriskham.com
Contact: alixbriskham@gmail.com
Bio: Although Alix started in 2D art, over the years working in the games industry this has expanded to a much wider range of skills. From UI/UX to texturing, implementing into Unity, translating art from Mobile Apps, PC games and into Virtual Reality as well as drawing in 3D on Tilt Brush. Alix has worked with many different people and companies from Cartoon Network, Akamai, Just Eat and BDH.

Dale Harvey

Location: Leicestershire, UK
Availability: From May 2017
Specialisation: 3D environment art
Studied: Computer Games Design BSc (Hons), Staffordshire University
Portfolio: https://www.artstation.com/artist/dharvey3d
Contact: dharvey3d@gmail.com
Bio: A keen 3D Environment artist looking to enter the industry. Dale has a good understanding of most, if not all, industry-standard software related to the 3D art pipeline, having spent many years studying throughout college and university. While he is looking to specalise in environment art, he is more than happy to work on anything 3D. Dale's time at university also allowed him to get a thorough understanding of Unreal Engine 4 both for art, and its blueprint system. Most of his work is shown with this engine.



Adrianna Oropello

Location: New York, USA
Availability: Part time freelancer
Specialization: 2D artwork, specifically character design. Heavily inspired by the fashion and makeup industry, and likes to cross that with game character design
Education: Studying Game Simulation Arts and Sciences at RPI
Portfolio: https://adrlloportfolio.tumblr.com/
Contact: adriannaoro@gmail.com
Bio: A half Japanese, half American girl. English is easier for Adrianna but she is a second generation Japanese person and can moderately read, speak and write the language. Because of this cultural background and the fact the bulk of games are made in Japan and America, Adrianna feels she has a useful outlook on what appeals to people in games, especially in 2D artwork. She can commit to long-term projects and has been running her own webcomic for three months.

Enrique Bernardou

Location: Asunción, Paraguay
Availability: Half-time/Freelance (20 hours/week)
Games: Interfectorem (Concept Art) and The Hole Story (Pixel Art/Backgrounds)
Portfolio: http://ebernardou.tumblr.com/
Contact: enrique.bernardou@gmail.com
Bio: Graphic designer/illustrator. Works as a freelancer and teaches drawing fundamentals at Kike Olmedo Arte & Diseño. Enrique's main fields of work are pixel art and cartoon-styled digital illustration, including character design, backgrounds, animation and concept art. Previous clients include El Surtidor, Centro Cultural de España Juan de Salazar, Girls Make Games (USA), International Game Developers Association, amongst others.

Alice Parsons (@Owlstation)

Location: London, UK
Availability: From May 2017
Games: Some recent projects include Secret Life of Boys 1 & 2 (CBBC), Silverpoint (Absolut Vodka), Doctor Who: The Doctor and the Dalek (BBC), Strange Hill High (CBBC), The Hope We Seek (Too Far Media) and Sickle Buddy health app (Imperial College)
Portfolio: www.owlstation.com
Contact: aliceowlstation@gmail.com
Bio: A freelance designer and illustrator based in London. Alice loves what she does and has worked on everything from games and apps, to album covers and temporary tattoos. She's been lucky to create for fantastic clients including Marvel, BBC and Absolut Vodka.

Felipe Rodrigues

Location:
Brazil
Availability:
Available for remote positions.
Games:
Vapormaze and two unannounced projects.
Contact:
felipeggrod@gmail.com

Bio: A plethora of multidisciplinary knowledge quickly turns Felipe into a valuable asset on the projects he is involved with. Thanks to his computer science background, he is known as the go-to guy by his art team mates. Felipe has contributed as 3D artist on several projects, including Vapormaze, a modern roguelike shooter. When not working, he plays piano pieces from unknown composers and pretends to be an italian gelato connoisseur.

Gaby Wilde

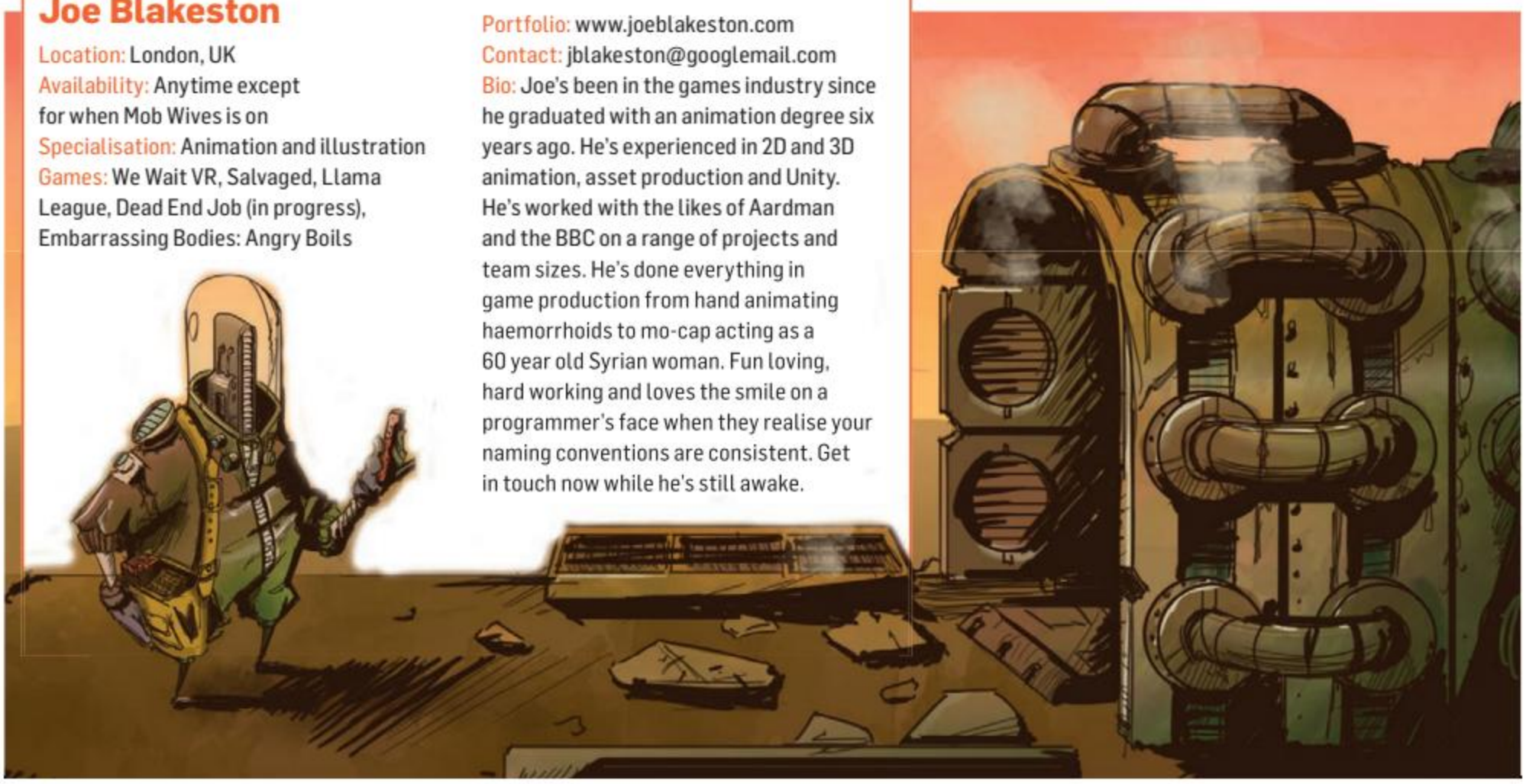
Location
Leamington Spa, UK
Availability
Commission/Contract work
Specialisation: 2D Character Concept Art, Illustration, 3D Character Modelling and High Poly Sculpting (3Ds Max, Zbrush)
Games: Super Rude Bear Resurrection, PlayPhoto and demo of as yet unannounced original IP
Studying: Finishing my FdA in Games Art at Warwickshire College

Portfolio:
gabyinwonderland.com
Contact:
gaby.digital.art@gmail.com
Bio: A freelance character artist/student from Leamington Spa, who has worked with various indie developers and mobile publishers. Avid game jammer, came first place in EGX Rezzed Game Jam 2015. Final year art student at Staffordshire, having studied games art at Warwickshire College for several years, after moving to England from Lithuania at 16. You can find Gaby on Instagram at @gabys_wonderland.

Joe Blakeston

Location: London, UK
Availability: Anytime except for when Mob Wives is on
Specialisation: Animation and illustration
Games: We Wait VR, Salvaged, Llama League, Dead End Job (in progress), Embarrassing Bodies: Angry Boils

Portfolio: www.joeblakeston.com
Contact: jblakeston@googlemail.com
Bio: Joe's been in the games industry since he graduated with an animation degree six years ago. He's experienced in 2D and 3D animation, asset production and Unity. He's worked with the likes of Aardman and the BBC on a range of projects and team sizes. He's done everything in game production from hand animating haemorrhoids to mo-cap acting as a 60 year old Syrian woman. Fun loving, hard working and loves the smile on a programmer's face when they realise your naming conventions are consistent. Get in touch now while he's still awake.



Maximilien Dehove

Location: France
Availability: Contracts or full-time
Specialisation: Environment Artist
Games: Currently working on an unannounced triple-A title. Already worked on: Watch Dogs 2, Divinity: Original Sin 2, John Wick: Chronicles, Syberia 3.
Portfolio: https://www.artstation.com/artist/bobmartien
Contact: maximilien.dehove@gmail.com
Bio: After his studies in France, Maximilien started his career as a freelancer in the game industry where he has worked on various projects. He enjoys discovering new projects driven by a creative and enthusiastic team.

Oli Smith

Location : Cambridge, UK
Availability : From May 2017 (Freelance and for Hire)
Specialisation : 2D artwork
Games you've worked on : Roll20 Marketplace
Portfolio: www.artstation.com/artist/olismithart
Contact: olismithart@gmail.com
Bio: Graduated from university studying Game Art Design last year, but moved to working onto personal freelance work. Oli worked on 3D environments at Uni, but now enjoys concept art and illustration. It's a different challenge but everything he learnt in University translates into his work now. As a huge Dungeons and Dragons fan,Oli's specialty is all kinds of fantasy and especially bringing peoples DnD characters to life. His work has a sketchy style, with fast painting speed making him perfect for working on concept art, creating believable characters and settings.

Lou Singfield

Location: Norwich, UK
Availability: From May 2017
Games: Three mobile games that are still in development
Studying: Animation undergraduate and masters in games art, both at Norwich University of the Arts.
Portfolio: https://lousingfield.wixsite.com/lou-singfield-art
Contact: @MiasAnimations
Bio: Lou Singfield is a 3D modeller and character designer. Last year she completed a scholarship-funded, internship in China for 2 months at a games studio. There, she drew characters, did some in-game animations and tested cool zombie games. Lou can take a character from concept art through to rigging and in-game animation. She is also happy to model objects and environments when bribed with cookies.

Alrissa Sia

Location: Norwich, Norfolk
Availability: From May 2017
Games: Cabal, a tabletop Kickstarter RPG by Andrew Peregrine
Studying: Year 2 Games Art and Design at Norwich University of the Arts
Portfolio: www.alrissa.com
Contact: alrissasia@gmail.com
Bio: Alrissa's aim is to make people feel the way she feels when she watches her favourite films or plays games.

A rollercoaster of emotions that everyone can associate with their own personal lives. She specialises in character design and development. For her, films are not just something to see; much like games, they are experiences and she want to create believable characters with feelings and personality as complex as yours and mine. Through quick iterations and working back and forth with a client or a team, Alrissa always tries to make fun and memorable characters.

Amelia Tzemis

Location: Kenilworth and Leamington Spa, UK
Availability: Currently still studying, but available for small projects.
Specialisation: Most qualified in character concepts and texturing, although also able to 3D model and sculpt.
Games: Currently working on a title for HTC Vive.
What I'm studying and where: Foundation degree in Games Art at Warwickshire College.
Portfolio:
https://www.artstation.com/artist/faunwithafez
https://sketchfab.com/millytzemis
Contact:
ameliatzemis@gmail.com
Bio: A 19 year old student currently studying FdA Games Art at Warwickshire College in Leamington Spa. Currently, Amelia's key interests are concept and character art. Her course has taught her to use 3D modelling and sculpting software such as 3ds Max and Mudbox to make organic and hard surface models. Amelia's studies have also provided her with the fundamental skills to create cohesive and visually pleasing concepts which she also enjoys making in her spare time. Amelia also attends life drawing classes, and does QA testing for local studios.

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ESCAPE **BOOM**

City centres across the world are being invaded by a new gameplay phenomenon. Escape rooms are proving immensely popular and **Jem Alexander** investigates how traditional games can inspire and be inspired by these locked room mysteries

You can't escape. There's a new genre of game in town and, while some might involve a few lines of code here and there, these games take place in the real world. Meat space. Where groups of friends are locked in a room, from which they must escape within a time limit by finding clues and solving puzzles.

These 'escape rooms' are popping up with a quickness all over the world. An Eastern European invention, they're now spreading across the globe thanks to a mixture of grassroots entrepreneurship and franchise expansion. With the exception of a few video games tie-ins (*Resident Evil VII* and *Zelda* both have room escape experiences that are currently touring), these play spaces are entirely separate from the games industry. Even though they share many design considerations that traditional games do.

It's understandable, then, that the owners and designers of escape rooms that we spoke to are all massive gamers. ▸

"I played a lot! I was playing on Atari and Amstrad right at the very beginning. I spent a lot of hours playing video games," says David Prebiski, owner of *Mission: Breakout*, an escape room set in a disused tube station in North London. Likewise *Time Run*'s game designer, Nick Moran, has been heavily influenced by traditional games in his role at the company.

"Our games are obviously inspired by triple-A games like Ken Levine's," he says. "You can see those threads there throughout. And *Broken Sword*, everything from old-school adventure games all the way to modern ones."

Like many game developers, these escape room owners and designers got into the business because they fell in love with the medium after playing someone else's games.

"I was originally working for an IT company that was developing banking software," says Stefan Vargolici, general manager of *Breakin' Escape Rooms*. "One evening me and my friends tried out a room escape game in my home town. We instantly loved it and started playing more games around the city. With each game we played we got the feeling that we could have developed the room so much better and we started getting ideas on what we would have done differently. This led to us opening up our own escape room venue."

Mission: Breakout's Prebiski had a very similar experience. "I'm in the business because one of my partners in France opened an escape room," he says. "It was the second to open in France and it introduced me to this kind of game that I didn't know. I played the game and it was very interesting. So we did it in London."

IF WALLS COULD TALK

For Prebiski, a feeling of immersion and emphasis on storytelling was key for his escape room. He didn't have a particular tale in mind that he wanted to tell, instead he let the location dictate the narrative.

"For me immersion was the most important thing," he says. "That's why I tried to find an unusual venue. Somewhere with character. Then we thought about the scenario and script. A good storyline that suited the history of the building, because the building was an air raid shelter. We wanted to respect the history of this place and make something that makes sense."

Prebiski found an old disused tube station (the remains of South Kentish Town) on Zoopla, advertised as a sauna. It had been used in World War II as an air raid shelter, which was the perfect backstory for an escape room.

"So we found the venue, then we thought about the game," Prebiski says. "It's about code breakers in the second World War. It's a serious thing. We wanted to make the game fun."

The story feeds into the gameplay to elevate it above more 'generic' escape rooms, where the only narrative is 'you're locked in a room; figure out how to escape'.

> **We try to have as few padlocks as possible so there is this constant sense of variety and surprise**
> *Nick Moran, Time Run*

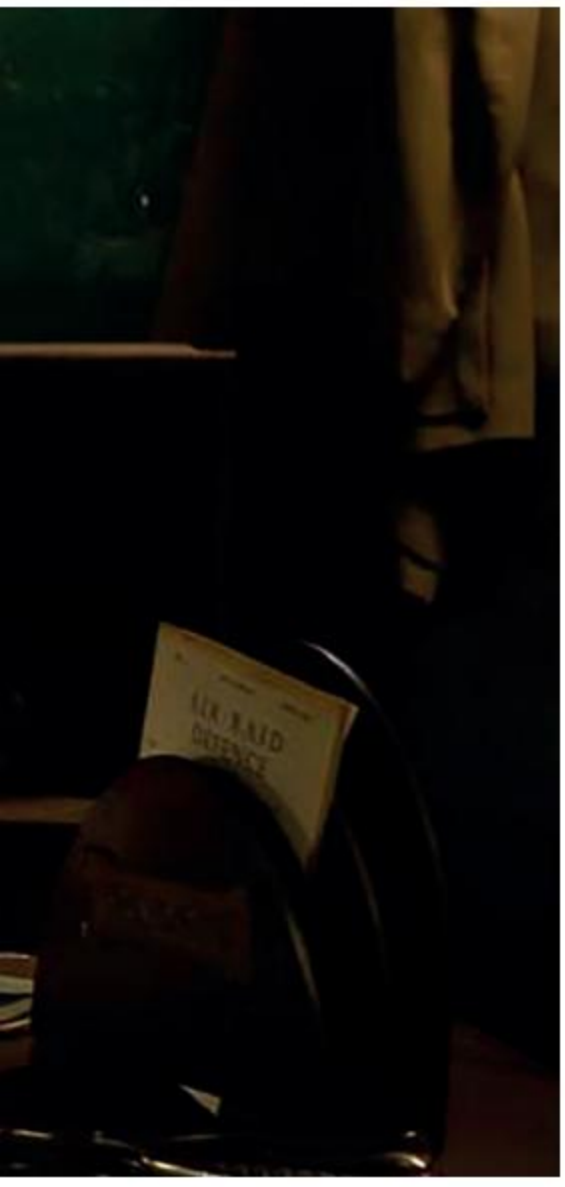
"It used to be that there was no storyline. You would just have to open a padlock. There was no story. Here you have a real story. You are immersed and we guide you through the story like you are a part of a movie. That's very important. This is where the escape rooms have the best feature. If you can immerse the people in the story, they have more emotions."

Time Run's Moran is in complete agreement. "There's the classic escape thing of locks, padlock, keys, codes, keys, codes, keys, keys, padlock, padlock, padlock," he says. "That's something that we try to move away from. We try to have as few padlocks as possible so there is this constant sense of variety and surprise."

In order to stay away from these already tired tropes, Moran took inspiration from the world of games.

"I think a lot of it is taking fundamental concepts of game design," he says. "The compulsion loop, for example. Desire, obstacle, solution. Present people with a desire. Present the obstacle in their way, and give the compulsion loop of the solution. All these basic principles of game design certainly are involved.

"Especially with the model of *Celestial Chain*, one thing we definitely try to do is take that thing that big triple-A games are very good at, which is introducing a mechanic, teaching people the mechanic and then offering variations upon that individual theme in a way that doesn't get repetitive.



Left: *Mission: Breakout* players are welcomed to the game by UK wartime Prime Minister, Winston Churchill.
Right: Shots from *Mission: Breakout* and *Time Run*'s second room, *The Lance of Longinus*.

"All these basic principles of game design that very much come from video games, and then extrapolating that in a live space."

But some of video gaming's bread and butter gives escape room players a bitter taste. "Repetition is very much frowned upon," Moran explains. "Because people don't enjoy that. Whereas in video games you can do lots of things that are almost identical and people feel satisfied, because you can do them in quick succession."

THE CIRCLE OF LIFE

The first escape room, *The Crimson Room*, was actually a Flash game, released in 2004, which asked players to explore a small room and unlock the door to freedom. "We just transferred this into reality," says Prebiski. "It's like the circle of life, you know? The escape room games online came from reality. And now we've come back to reality with escape rooms. Now escape rooms will go back into a virtual world with VR.

"It's very cool because you can't do everything with an escape room. You can't go to the moon. Other worlds aren't accessible in reality. So with VR we will be able to play in the kind of world you can't access in real life. Gives the game another level."

Breakin' Escape Rooms' Vargolici is keen to explore the world of virtual reality escape rooms in the future, too. "We are actually very interested in VR and we are keeping an eye on its evolution," he says. "We have considered using VR technology in some of our rooms, but we consider that it has not reached a level where it would be feasible for us to use it the way we want to, so we will wait it out a bit and see what happens in the coming years.

"I believe that you can do a lot of things when combining VR and escape games because you can have the perfect mix between a framework space, a real-world environment, and a virtual space which you would model around the real one, but without having to adapt to its limitations. Thus you can have challenges which involve interacting both with real objects, but also with virtual ones, creating a comprehensive experience which transcends currently existing games.

"I believe that more and more people are looking into these type of immersive activities and because of the growing interest there is an increasing number of new forms of entertainment developing, such as immersive theatre, treasure hunts, interactive tours of sights, etc. This in turn I believe will fuel VR's success and it is only a matter of time before this type of technology becomes mainstream and it will also be more accessible for what we plan to do with escape games in the future."

That future for escape rooms looks bright. Everyone seems happy with the way the market is growing and, much like the groups that play their games together, there's a sense of cooperative community surrounding the escape room scene.

"It's good," says Moran. "It's very good. It's vibrant. It's getting bigger and bigger. A lot of franchises are moving into the market. It's been very home-grown until now. Started by enthusiasts who love these games and a couple of big franchises.

"What I think you're going to see now is the next phase of the market. Some of the bigger players in Europe and worldwide trying to come in and capitalise. Some really good international games will come, but a lot of the franchises are bang on mid-market. They're not bad, they won't change your life. They're not trying anything new. They're conservative, solid games. I think that's the next phase of the market.

"Because of that, hopefully, that'll mean everyone will have to up their game and hybridise and try different things. So I think it's quite an exciting time. The invasion is coming, in a good way, of all these bigger boys that's going to excite and throw up the market a bit and make everyone think a bit harder about what they're doing and challenge themselves."

So how long until the escape room market is saturated? "There are never too many," Prebiski says. "It's like restaurants. You can have many restaurants. Different styles of restaurants. Depends what you want to eat. Escape rooms are the same." ■

INSIDE TIME RUN

Nick Moran, Creative Director at Time Run, guides us through the anatomy of an escape room and how the team went about designing The Celestial Chain.

Entrance Hub

The Archive: Narratively, this is a Museum-like archive, where all manner of artefacts from across space and time are collected. Structurally, this serves as a rabbit hole: an introductory, playful area, where a host – in this case, Dr. Aubrey Defoe – gently introduces you to the world of *Time Run*, and states the objective of your mission. Without breaking character, he introduces the basic rules of health and safety, acting as a cross between an interactive cut-scene and a gameplay tutorial, giving players the general boundaries for how you should play, and the parameters of their mission. The goal of the mission is set: a rogue goddess has been unleashed and they must collect a series of artefacts from across space and time to bind her and seal her away, for good.

Artefacts case: The results of previous missions across space and time and hints to prior and potential future missions.

Babbage Mk2: An earlier, decommissioned version of the robot who accompanies players on their journey through space and time. Narratively, he is the assistant to the main character, Luna Fox, but he acts as a vehicle for help and guidance (i.e. clues). He is meant to be lively, charming and likeable.

Trunks: Where players deposit their belongings. It is important that players are unencumbered by possessions, especially modern technology: it can be a hindrance and a distraction.

The Celestial Chain:

Each alcove is a location for a possible artefact that is obtained on the journey through space and time. The number of artefacts the players obtain will determine the narrative outcome that they get: and their final score. However many artefacts players place in the alcoves before a certain time determines the flow of the end sequence.

The Altar: At a certain time during the end sequence, the button rises and players have their opportunity to finally complete their mission, sealing away their antagonist.

The Celestial Chain: A machine, according to the narrative, but also the theatrical end-piece to the game. When the button on the Altar is pressed at the appropriate juncture, the machine activates, spinning into life: a smoke and lights show to end the experience as a whole.

East India Railway, 1885

The first time period - The East India Railway: A nexus for all manner of stolen rail goods. They Players' object is to obtain as many artefacts as possible before the time runs out. Structurally, the area is straightforward and unpunishing: it's a gentle beginning, where players can get used to the idea of playing under pressure.

The Crane: The crane is a large device with a magnet on. Inside the cargo hold, there are various boxes, marked with a red X which must be correctly identified and obtained. Some are simple to obtain, others more complex, i.e. you must navigate through a maze of shelves in order to obtain what you need.

The Window: Outside the window is a train platform. Below it is a grating. You have to use a broom from inside the luggage cage to maneuver a box, containing a disc, open the grating and obtain it.

The Workshop of The Banu Musa – 895, Baghdad

Three brothers, brilliant scientists: The Banu Musa were three legendary pioneers of engineering. The toast of 9th Century Baghdad, famous for their "book of ingenious devices". The puzzles in this room are modelled on those contraptions. Notes line the wall, purportedly from the Banu Musa brothers themselves, offering valuable hints.

The Valve Lock: Each valve controls the flow of compressed air, piped in from outside. Once air is channeled in the correct manner, a magnetic lock is released on the opposing wall.

The Windmill: Compressed air flows through a pipe system into a wire cage. Once the air is successfully channeled into the device, a key rises through a series of cogs into the hands of a waiting player.

The Astrolabe: The Astrolabe is a medieval device designed to measure the position of heavenly bodies. If the notes are piece together, and the correct day and time of measurement is identified, a hidden compartment opens underneath.

The Music Sequence: Through the window flows music, the sounds of Baghdad – in the distance is a church tower. If correctly replicated, it spells a sequence, which can be inputted in the adjacent numeric lock.

Mars, 2090:

The goal of Mars is not to collect artefacts, but to survive as long as possible. An Oxygen tank is on the ceiling, suspended and attached to a rail. Players must navigate it through the space to the Oxygen Relay Bay.

The Turntable System: On the floor is a flight case, inside is a keycard. The keycard opens the turntable control system, a series of electronic rotating discs on the ceiling. Players have to use the system – and their dexterity – to safely transport the Oxygen tank to the other side of the room.

By the central doors, there is a key-sequence that's revealed in an audio transmission – only when players reach the door does it trigger.

The Buggy blocks the track: Players need to start it up to get it online. Locating and following the manual (and of course, getting inside) will cause the engine to fire up: then you can engage the engine in reverse.

The Soviet Bunker, 1954:

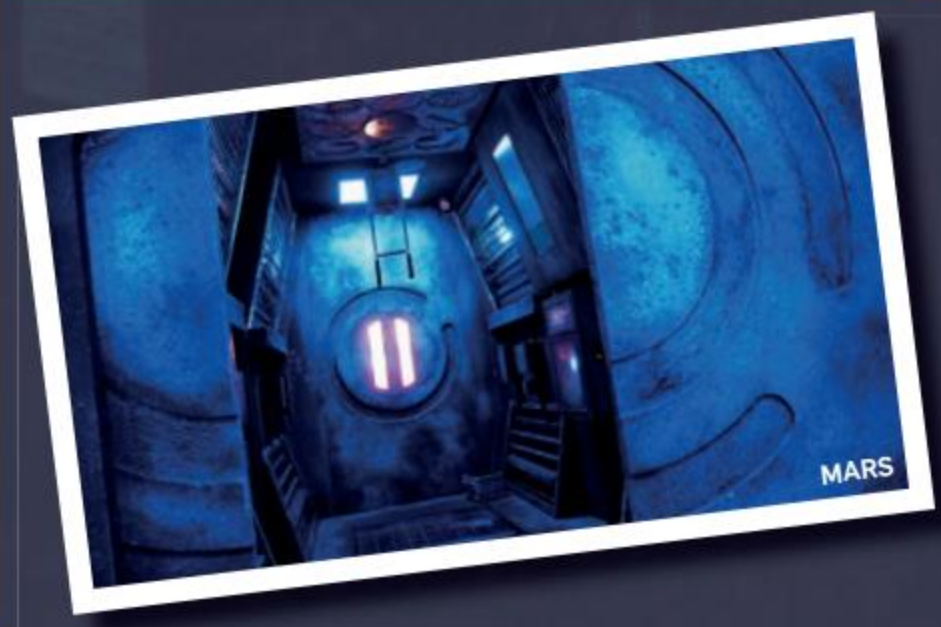
Players are looking for as many rods of "furium" as you can find. The space is divided into two halves: The Laboratory and The Office. The Office contains cameras and notes and the Laboratory contains the override units that release the samples.

Microphones: The Bunker tests communication: information is divided and split, players must use microphones to relay what they find to each other.

Modules: Each individual module is its own puzzle – some are logical, and make sense in-and-of themselves. Others require input from players in the other room. All must be completed to release a rod of furium.

Furium Units: By successfully completing puzzles in the Laboratory, these boxes swing open.

The Glove Unit: The glove unit requires teamwork. A player in one room has the ability to turn the lights on in the sealed unit, and a pair of gloves. A player on the other side of the wall has vision inside the case. Together, players on both sides must communicate and work together - one has the power of touch, the other the power of vision. If successful, they expose a sequence of codes on a series of vials, that unlock a hidden safe.



HEARD ABOUT

WIPEOUT OMEGA COLLECTION

John Broomhall talks with supervising sound designer Loic Couthier about re-imagining the soundtrack of an iconic franchise

WipEout Omega Collection combines the content of *WipEout HD*, *Fury* and *2048* in one remastered collection for PS4 with enhanced visuals and audio. With music such a massive part of the experience, what treats does the soundtrack hold?

"It has twice the music of previous incarnations," said Loic Couthier, supervising sound designer on the collection. "28 licensed tracks from *WipEout* legends like The Prodigy & The Chemical Brothers through to unreleased tracks from breaking artists. We have a range of DSP effects applied to the music in real-time, based on gameplay. Like the reintroduced resonant high-pass filtering as you jump/fly with your ship. Plus, everything's mixed in 7.1 exclusively for the game!

"Our music supervisor, Duncan Smith, approached all labels/artists for multiple stems to enable us to dynamically pan them in real-time and up/downmix the soundtrack on-the-fly depending on speaker setup, perfectly maintaining audio quality/content no matter the channel count."

Artists visited the Sony CSG Audio department in London and experienced how Couthier had grouped stems based on sonic characteristics so he could design sidechaining rules which only target musical elements potentially in conflict with specific sound and dialogue content. Good thinking!

"A gameplay voice-over will apply sidechain to the music's vocals. An explosion ducks transient-heavy music parts (like drums) leaving instrument levels untouched. Also, there's a music sub stem which is ducked only when a sfx with sub-frequency content happens. This mix is all about very fast substitutions of parts between sfx and music, so only one element cuts through at a time. We have master ducking and fx, because if you only use the fast, surgical technique, the mix will sound clean but flat. Adding intentionally noticeable ducking makes it feel cool and dynamic."

As well as music advancements, the team re-visited the sound to keep *WipEout Omega Collection* feeling fresh and futuristic, modernising some

elements, introducing new ones, and ditching others.

"Every sound I identified as iconic (as a fan) is remastered," said Couthier. "A combination of EQ, redesign/re-synthesis, adding new layers to fill gaps in the spectrum, and increasing impact and dynamic range. Almost all other sounds have been totally redesigned with modern tools. We've added real-time parameters in code (such as altitude, acceleration, doppler) to better represent gameplay with audio."

With PS4 developers encouraged to achieve an average loudness of -24 LUFS, Couthier knew he would have way more headroom compared with previous titles released during the 'loudness war': "The original games' mixes were (as you'd expect) very flat, but the new standard allows much more dynamics."

One of the most significant aspects of the development was Couthier's approach to detailed pre-production, developing an 'audio vision'.

"I analyzed every sound's evolution over the 20-year franchise history, benchmarking with modern references and creating audio pre-vis using old footage. We only had four months' production. So comprehensive, initial work really focused how to deliver the closest to my vision within the time." ■

John Broomhall is a game audio specialist creating and directing music, sound and dialogue

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A PORTFOLIO OF **YOU**

Sean Cleaver asks UK games studios and recruiters what they look for in an artist, the skills they need to display when applying for roles and how creating a varied portfolio is key

(L-R) Amazon Game Studios' Daniel Dociu, Sumo Digital's Dave Blewett, Dom Hood and Ian Deary

Being an artist is a multifaceted job. Which, for the most part, is excellent for the games industry. The variety of projects, designs and requirements that developers task artists with are nothing if not excellent for learning skills.

Getting a job in the industry as an artist can be a difficult thing, not least because of the requirements of the job. As different games require different skillsets and different abilities, what do you need to do as an artist to get your foot in the door?

One of the key things to consider is when you come on to a project. The availability of artists can dictate what a game's art style is from its conception. "Early concept art can shape the tone and style of an entire game," says Alex Clarke, lead artist on Edge Case Games' *Fractured Space*. "Even down to the level design. Getting the atmosphere and mood right in a visual target will influence the entire project."

Playground Games' art director John Rowe also believes this to be a symbiotic process. "Art and design should never be developed independently on a games project," Rowe says. "Form and functionality go hand in hand in video games, and their collaboration can make or break the end result."

Rowe's colleague, senior VFX artist John Reitze, agrees. "Art plays a huge role in a games direction, but I *would* say that. I would say there is a symbiotic relationship between where all areas of game development can influence or dictate a project's direction – design, art, code, audio all play their part in how a game evolves."

Ian Deary, art director at Sumo Digital also agrees. "Art on its own doesn't dictate how a project evolves. Typically the evolution of a project is more closely bound by the relationship we have with our clients and the development team working on it and, of course, the audience we're making the game for. It's definitely a team mentality here and we all participate in that evolution. I'd say that was one of our greatest strengths."

NON-DISCLOSURE

Another thing to consider is how you approach an application if the project has not yet gone public. Whilst it is common practice to tailor a CV to the specific role that you're applying for, catering a portfolio can be trickier when you don't know what it is the studio wants.

"I think it's incredibly difficult to tailor your CV for a particular project," admits Sumo Digital's Ian Deary. "Particularly as many are unannounced and we can be working on something very stylised in one part of the studio and something ultra-realistic in another. Even the age-old advice of looking at the games a studio has done in the past doesn't give an applicant a crystal ball into what we might be working on here, either currently or in the future.

> **I'd rather see fewer quality pieces than page after page of sub-par work. If you're less than happy, then don't show it**
> *Jonathon Rowe, Playground Games*

"That's why it's more important to concentrate on quality and diversity in your portfolio and choose a style or styles you enjoy rather than one you think might impress. People's passion is a key ingredient at interview and it's obvious when people are talking about something they love."

"Unless a studio has gone public with a title they are working on, you cannot know beforehand what style to target in your portfolio," says Sumo Digital's art manager, Dave Blewett. "It is therefore essential, in my opinion, to show a variety of work styles, ideally across a variety of platform types too. Show that you are flexible in style and interests"

"Along with finished pieces, it's always good to share intermediate sketches and development work," says Playground Games' Jon Rowe. "It gives the hiring manager a useful insight into the thought processes involved." Playground's John Reitze also says that you should look into the studio you're applying for. "I would say 'do your research,' look in to the studio's history, know what kind of games the studio produces, and make

(L-R) Amiqus' Stig Strand and Meeta Mistry, Playground Games' Johnathan Rowe (Top) and John Reitze (Bottom)

a guess at the type of game you think they will be creating next. But don't feel you have to create a portfolio that is 100 per cent bespoke to the studio you are applying to. If you are applying to multiple jobs your portfolio could be 75 per cent general and 25 per cent bespoke artwork for each job."

Managing director of Aardvark Swift, Ian Goodall, also recommends versatility and research. "Having a preference for a particular style of art is fine, but versatility in your portfolio is vital when looking for a job. It opens up so many more doors to you. If there's a studio you're interested in, but are unsure of the project, create some art in the style of their existing work. Better yet, ask them what they want to see. Being proactive will go a long way."

Alex Clarke of Edge Case Games also suggests looking deeper into exactly what the employer is looking for. "Cherry-pick pieces that are relevant to the job you are applying for. If it's a weapons and vehicle position, don't submit a portfolio full of organic environment art. If you don't know what the project is, look at their current and past titles and try to cater to the company's track record."

Meeta Mistry from recruitment specialist Amiqus looks at the issue from a different angle. What if the title you've been working on in your portfolio hasn't been made public? "From a candidate's perspective, if your work is under NDA and the title has been announced, saying that you have been working on 'xyz game – work to follow' goes a long way."

> **A strong portfolio is by far the sharpest weapon on a job hunt. The volume of work demonstrates one's ability to deliver**
> *Daniel Dociu, Amazon Game Studios*

PORTFOLIOS ARE KEY

With the need to have a varied set of artistic skills on display so that you can cater to specific projects, an artist's portfolio is a large part of deciding their employability.

"The impact is huge," says Amiqus' Stig Strand. "Studios are always looking to hire artists who can hit the ground running and create assets in a timely manner with triple-A polish. The portfolio shows the hiring managers exactly what the applicant can do today and their level, so it's essential that it's up to date."

Keeping the portfolio clear is also important, according to Playground's John Reitze. "An artist's portfolio is a huge reason why someone is employed," he says. "It's usually the first thing an employer sees. So that means you want to present your best work. Don't overload your portfolio with every piece of work you've done, rather pick out the best pieces of work and present than in a clean, easy to view way and, where possible, show break downs and a work process."

"I'd rather see fewer high quality pieces, than page after page of sub-par work," says Playground's art director, Jon Rowe. "If there is anything in your portfolio you're less than happy with, then don't show it."

Dominic Hood, an art director at Sumo Digital, looks at how your portfolio should represent your qualities as an artist as well as your technical skill. "Your portfolio is key to selling your abilities. This should showcase quality, versatility, skill, imagination, observation, enthusiasm and personality in equal measures.

"It's always advantageous if we can see diversity in any portfolio. That said, if the quality of the work is of a high standard there's a good chance we'll call that person in for a chat even if we don't have an exact stylistic match at the time. Things change quickly here."

Glenn Brace, art director at nDreams, looks to a 'few solid examples of the core basics' when recruiting artists.

"As an art director I'm looking for evidence that the individual understands why a piece is strong and is able to demonstrate good judgment," says Brace.

"Projects change, styles are developed, but the core understanding and ability to wield composition, use of colour, lighting and the ability to frame and contextualise your work is and will always be relevant, no matter what a project's direction."

Brace recalls a specific example of this. "I remember a previous art test with a brief to model and portray an old tractor. There was one artist who painstakingly recreated the tractor from all aspects with technical and rendering excellence, plus rendered it out from four different perspectives, a very time consuming but an incredibly accomplished asset. Another artist chose to place the tractor under an old wooden shack, weathering the metal and breaking a few elements to illustrate a state of disrepair, the materials and colour choices used were mute and worn.

"It was not modelled or rendered to the fidelity or skill of the previous piece, but one composed render that was well framed, contextualised and motivated toward a sense of narrative and mood, told me so much more than the previous artist.

"The second artist made the choice very easy for me. I can help apply those skills to any aesthetic or art direction because that artist understood the creative brief and demonstrated good judgment overall."

Director of art for Amazon Game Studios, Daniel Dociu, also looks to the portfolio as an indication to artists' transferrable talents. "A strong portfolio is by far the sharpest weapon on a job hunt," says Dociu.

"Its quality speaks to the artist's ability to communicate through images, their command of visual language, the depth of their foundation. The volume of work demonstrates one's dedication, productivity and ability to follow through and deliver."

But Dociu does admit that the process of recruitment can occasionally miss the potential in people. "Ideally portfolios should be screened by people with a solid art background and thus have the ability to identify potential, beyond the stylistic match between the content presented and the needs of the project.

"Whenever that is the case it is less critical to tailor the portfolio to the specifics of the project. Unfortunately it is rather common for pre-screenings to be assigned to recruiters less versed in art, who may be inclined to seek a more literal, direct match, and potentially dismiss high caliber talent on the grounds of a discrepancy with a rigid interpretation of a job description." ■

MOVERS AND SHAKERS

The latest high-profile hires and promotions

HTC VIVE

Paul Brown has joined HTC Vive to become general manager of Vive Europe. Brown has spent the last six years at Disney as general manager for Digital D2C and Disney Interactive for EMEA, launching the video and music subscription service DisneyLife. He was previously the UK MD for Spotify. His role at Vive will be based in London and focus on the VR content, software and hardware ecosystem.

AMAZON GAME STUDIOS

Craig Sullivan, formerly of Ghost Games EA in Sweden, will be joining Amazon Game Studios in Orange County as creative director. Sullivan has over 20 years experience in the industry, working across multiple titles with EA including *Need for Speed* and time at Criterion on *Burnout* and *Black*.

ESPORTS PRO

Joining Develop's sister title, eSports Pro is Jake Tucker. Jake has recently been contributing to Develop and is one of the most well known freelance journalists in the industry. Previously published by IBTimes, Waypoint, Bit-Tech and Eurogamer, Jake has also been a champion of discussion as director of the Video Brains monthly events. Jake is also very good at *Rainbow Six Siege*.

VALVE

Writer and VR ambassador Chet Faliszek has left Valve after 12 years with the company. Faliszek was behind many of Valve's most popular games including the *Half-Life 2* episodes, *Left 4 Dead* and *Portal* games. Faliszek was also heavily involved in Valve and HTC's VR platform, encouraging developers to work in the medium. Fellow writers Mark Laidlaw and Eric Wolpaw left the company last year.

GET THAT JOB

This month: David Canela, senior game designer at Tequila Works

What is your job role?
I'm senior game designer. I design different systems and mechanics for the Tequila Works titles and it's also my responsibility to coordinate with the code, art and level design departments to implement them properly in the game.

What qualifications and/or experience do you need?
Even though there are lots of game design courses and degrees available these days and that can be a good thing to have in your CV, I don't think it's mandatory for becoming a game designer. The most important experience you can have is creating your own game, even if it is a small one. As a game designer it is important to have at least some knowledge about video games programming and art, as you will be working closely with those areas.

How would someone come to be in your position?
To become a game designer, start by designing your own games. It doesn't need to be a big game, but at least a finished one. Prototyping some game mechanics is also a good idea. But you don't need to restrict yourself to video games; board games can also be a good experience and more achievable without technical knowledge. Create a small portfolio that you can show in the interviews and then explain the challenges you met and how you overcame them.

If you were interviewing someone, what do you look for?
I look for two main characteristics: The potential to become a good game designer and the ability to work in a team. For the former, being able to solve problems with limited resources and intelligent solutions is a must, as is being able to describe and dissect how a system works. For the latter, I would look for someone with good communication skills. It's better to have a designer with potential and good teamwork skills than a genius that can't communicate with anyone.

> **It's better to have a designer with communication skills than a genius that can't communicate**
> *David Canela*

What opportunities are there for career progression?
At first you will start as junior game designer. With experience you will progress to become game designer and then senior game designer. The difference in these positions is the amount of responsibility and freedom you get. The next step is to be lead game designer. It's worth mentioning that this is management position, and the skills required are different.

Why choose to follow a career in your field?
If you love video games and want to contribute to this industry, being a game designer is one of the most gratifying jobs you can get. It requires different skills than being a programmer or an artist, but you get a good perspective of both disciplines. ■

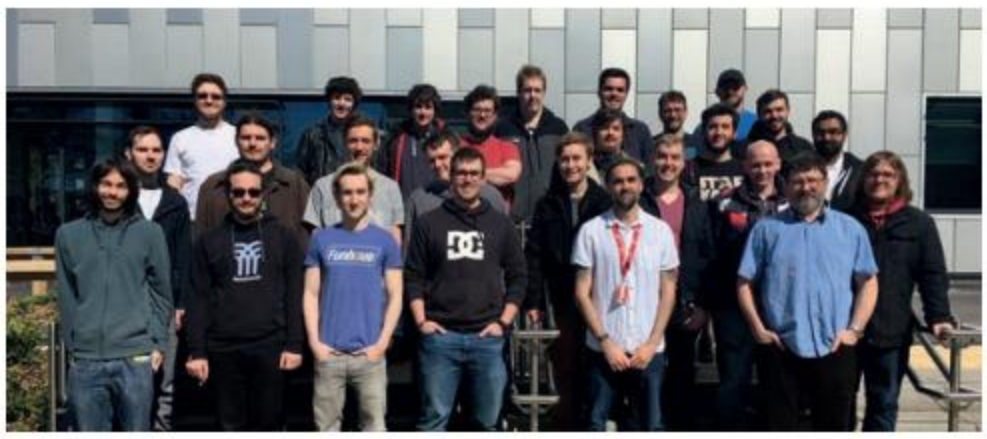
SKILLS AND TRAINING

This month: Paul Roberts of Staffordshire University talks about their partnerships and getting students ready for the video games industry

Staffordshire University was one of the venues for this year's Search for a Star code finals. But the connections to the games industry run deeper than events for graduates, as the Computer Game courses try to get students experience of how studios work and what to do to get a job.

"Our courses are focused on the skills required to develop games in the real world," explains Paul Roberts, scheme lead for computer games programming at the University. "We work closely with games companies to ensure this is the case, and even have a core second year module called Technical Games Production which sees our students delivering face to face pitches at different studios.

"We strive to make our degree programs as relevant to the industry as possible. We do this by bringing in as much industry input as possible."



These studios include Playground Games, Codemasters, Radiant Worlds, Sumo Digital, Team17 and Boss Alien amongst others and the studios get a lot of opportunity to collaborate and interact with the students with guest talks, networking events and judging student contests.

"We have built relationships which have seen our students working at the Insomnia gaming event," explains Roberts, "where they can be found on stands with Payload Studios. At i59 our students managed the 24hr live streaming of the Mega Panel, which was in aid of the Special Effect games charity. Staffordshire University also partner with Epic Games to bring the Epic Games Centre. A lab fully kitted out by Epic Games where developer days are hosted, but also allows our students to use their equipment."

Overview: Staffordshire University offer BSc (Hons) Computer Games Programming, BSc (Hons) Computer Games Development, BSc (Hons) Computer Games Programming (Virtual Reality) and MSc Computer Games Programming
Address: Staffordshire University, College Road, Stoke on Trent, ST4 2DE
T: 01782 294000
E: Paul.roberts@staffs.ac.uk
W: http://www.staffs.ac.uk/

It's important to get students trained and educated to a reasonable standard, but it's just as important for students to learn how to get work, what to expect and how to interact with the industry away from the day-to-day tasks. "It is vital that students experience the full development cycle of games creation in order to fully appreciate the amount of work required to release a quality title," Roberts continues. "There is also the opportunity for students to do a placement year within the industry, or to work in our own in-house studio 'The Digital Kiln' to develop larger scale commercial products." ■

RECRUITER **HOT** SEAT

Media Molecule HR Manager, Joanna Mabey discusses the recruitment needs of a small development team, triple-A development and what to do if you want to become a 'Molecule'

What differentiates your studio from other developers?

For a triple-A developer, we're quite a small team and we like to maintain a family vibe throughout everything we do. Our studio is a welcoming, inspiring and productive work space, with a giant pink carpet and a few office dogs thrown in for good measure!

We work collaboratively and all sit together in a big open plan mish-mash so we can work as closely as possible with one another. Hard work and dedication is important to everyone on the team, but we also know the importance of family time. We often host events throughout the year that our families and 'Mini Molecules' can get involved with which extends our family ethos even more. We're one big Molecule family.

How many staff are you looking to take on?

We're a small, lean studio but we're always happy to receive applications from people who are qualified and right for the role in hand. We're passionate about hiring so it's important to us to have the right people in the right roles. When we find the right people, we're as flexible as possible and have many different working arrangements in place to accommodate the needs of our team.

What perks are available to people working at your studio?

Looking after our Molecules is a top priority for us and this is reflected in the benefits available to those who join our team. We offer private medical and dental healthcare along with a great pension scheme, life insurance and personal development funds to help our employees develop their skills both inside and outside of work. One of our most cherished perks would have to be our two in-house chefs Kath & Eoin who cook us fresh, healthy and delicious meals every day, as well as tasty cakes and mid-afternoon pick-me-ups to keep everyone suitably fed and watered. There's also a number of classes that our Molecules can get involved with including life drawing classes, Japanese lessons and a singing group. Honestly, there's too many to mention! We have listed all our benefits in full on our website.

What should aspiring devs do with their CV to get an interview?

Always include a showreel (or if you're a programmer a github or personal site link) and keep it simple! This is your time to shine and we love it when applicants make it easy for us to see their work. It's also really important to tailor your CV to the company you're applying to. Take the effort and care to do your research and review what you're applying for, and who you're applying to. Including a well thought-out cover letter or email also shows us that you care about our studio and the job. And make sure your CV isn't an essay either - keep it short and to the point as those are the ones that always catch our eye.

> **We want our Molecules to feel valued and make a difference**
>
> *Joanna Mabey*

CURRENTLY HIRING

Company: Media Molecule
Location: Guildford, UK
Hiring: UI/UX Programmer, Sound Designer, Audio Programmer and more
Where to apply:
www.mediamolecule.com/jobs

Who is the best interviewee you have ever had and how did they impress you?

We are impressed with those who have done their homework and have a passion for the industry – it's always great to interview people who know about us and the project we're currently working on, and are excited and enthusiastic about it. Show dedication to your craft and be proud of the work you produce. It's great to meet someone who loves what they do and is keen to bring their skills and experience to the team.

How have your recruitment needs changed?

Our recruitment needs don't tend to change very often. We have a lean, highly experienced team, and when we find the right candidates we make it our goal to keep them. Retention is really important to us. We want our Molecules to feel valued and be able to make a difference in our games. Our Molecules have impact and input.

Why should developers join you when indie and self-publishing has become much more accessible?

We're a Sony First Party Studio with an independent spirit and collaborative approach to development.

We have protected all the things that we loved about being independent but enjoy the amazing benefits that come with having a publisher like Sony behind us. Molecules get the best of both worlds! ■

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ASK AMIQUS

Liz Prince, business manager at recruitment specialist Amiqus, helps solve some of the trickier problems job seekers currently face in the games industry

Q Dear Amiqus, What considerations should developers make when employing artists for their projects?

As recruiters we understand that finding the right hire is rarely easy, and even perfectly matched skills aren't enough if team-fit isn't spot on. When hiring it's the process that drives your search, providing you with insight into the market, and faith in this should lead you to a valuable new team member. There are some logical considerations to go through to help you on your way.

A good starting point is the kind of game you're looking to make and what you want it to look like. If this hasn't been decided you could need a concept artist to get the ball rolling. Whether your new hire will work on a single IP or multiple titles with varying styles is also pretty fundamental, because this will determine whether you are looking for a specific style or versatility and variety in a portfolio. It will also establish how regularly – if at all – you will be at concept stage and need that initial creative spark.

Whatever the visual style, identifying the work to be done will help you to understand what kind of artist you are going to need. This leads to a cascade of considerations. Do you need props and assets or entire worlds? Do you need a generalist or specialist? For smaller studios it's more typical to utilise generalist artists who enjoy variety, turning their hands to whatever needs to be done. For larger studios and AAA developers in particular, there can be deeper levels of graphic refinement and an array of specialist art organic, hard-surface, texture and lighting – there's a lot to think about.

TECHNICALLY SPEAKING

Tech and platform are big considerations, not to mention a significant investment, so take a view on whether your artist will be integrating assets into the game and potentially need engine experience. Adding in deeper technical skills could impact the size of the candidate pool available and the budget needed for salaries – technical artists are in high demand. The software packages you deploy will also shape the experience you need and although the usual choice is between Max and Maya, many artists find they can pick up one or the other quickly, even without direct experience. Other tools such as Photoshop, Illustrator and After Effects are fairly ubiquitous so here it's a case of what level of detail you're looking for and finding experience of a similar poly-count to the one your game-ready assets will be.

> **Hiring artists is always exciting, and bringing in new talent is a worthwhile endeavour**

Once you've pin-pointed the work that needs to be done, you'll need to look at what you already have, filling gaps with the new hire or by up-skilling your team. If either skills-shortage or volume of work means that the resources don't match demand then a hire is necessary. In smaller studios a new hire adds a higher percentage of the workforce, so the risk/benefit of a new recruit is magnified. Level is also a consideration; if your team needs a lead then you'll need to set out the mentoring competencies required. Perhaps you have someone ready to step-up you can promote?

WHAT'S THE COST?

At this point you've a view of where you're headed and what kind of artist you need so you can gather this criteria into a job specification. The next key questions are what's your budget and how long do you need them for. Are you hiring for a specific project or to address a long-term need? This will lead you to the type of employment arrangement to seek for your newbie. When hiring a specialist in particular, it's important to consider where you can use those niche skills after you've completed this project – if not it's a strong indication that you should consider a contractor.

When you go to market, whether that be via an agency or directly, you'll need to set out the criteria you're going to apply to filter through to the people you want. Good recruitment is based on evidence and, for most jobs, previous career experience is the logical place to gather examples of skills. When it comes to artists most studios base their first assessment on a portfolio, only referring to a CV if they like what they see. Viewing portfolios is very time-consuming so building in some resource for this is very important. When using an agency it's a good idea to provide a few demo portfolios showing what you want.

Selecting artists is notoriously tricky because art is very subjective, so it's important to identify skill as well as style. For some studios an art test is used to solve this conundrum, however there are some pitfalls. It's fair to say that many game artists are already working in jobs and this means that completing a lengthy test is tricky to fit in with an already full creative day. Many seasoned artists with extensive portfolios are reluctant to complete an art test which demonstrates skills already shown in their work. However for entry to mid-level hires or for a specific style that is not currently present in a portfolio, testing can prove useful. Timing is everything on this, putting the test up front as a first stage might save you time but reduce your candidate pool. Placing a test later down the track helps to build some rapport and commitment from the candidate first.

Hiring artists is always exciting, and bringing a new, unique talent into your business is a positive and worthwhile endeavour. Taking steps to make this the right hiring decision for you is well worth the investment when the world gets to see your beautiful game and the contribution made by your team. ■

Liz Prince, business manager at recruitment specialist Amiqus, helps solve some of the trickier problems job seekers currently face in the games industry

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FEEL THE BLOOM

Epic Games' principal mathematician, David Hill, talks about the effect of realistic lighting effects in Unreal Engine 4.16's newest feature - Fast Fourier Transforms Bloom, and other engine updates

While developers have long relied upon Unreal Engine to help meet their ambitious creative and technical requirements, Epic Games continues to evolve the technology in order to keep teams of all sizes on the competitive edge in terms of visuals.

Several new features shipping in Unreal Engine 4.16 give artists access to all-new levels of detail and control over their work. One such feature is Fast Fourier Transforms (FFT) Bloom, introduced to enable ultra-realistic lighting effects that can improve the visual quality of content.

For those new to the subject, bloom is a real-world light phenomenon that can greatly add to the perceived realism of a rendered image at a moderate performance cost. Bloom can be seen by the naked eye when looking at very bright objects that are on a much darker background. Even brighter objects can cause additional effects, such as streaks and lens flares, but those are not covered by the classic bloom effect.

As most displays do not support high-dynamic range (HDR), it is often challenging to render extremely bright objects. It is for this reason that UE4 simulates the effects that happen in the eye (retina subsurface scattering), when light hits the film (film subsurface scattering), or is in front of the camera (milky glass filter). The outcome may not always be perfect, but it can hint at the relative brightness of objects and add a level of realism to low-dynamic range (LDR) onscreen images.

Unreal Engine 4.16 ships with a new bloom method that empowers artists to use custom bloom kernel shapes. This method, which uses FFT to perform the operation in real time, carries a heavy render performance cost but is very useful on high-end PCs and offline cinematics. As an example, Chevrolet's *The Human Race* UE4 demo makes extensive use of this technique.

"To produce visually complex and physically realistic bloom effects, we have adapted a technique used in the offline film world to our real-time environment," said David Hill, principal mathematician at Epic Games. "This feature, which consists of image-based FFT accelerated convolution, is designed for use in cinematic production or on high-end hardware. In this approach, the scattering and diffraction of light within a camera or eye that give rise to bloom is modeled by a mathematical convolution of a source (unbloomed) image with a kernel image."

The effect gives artists control over the intensity in order to match the results they imagine. Within a single frame, this technique produces a continuum of responses ranging from radial star-like bursts to diffuse glowing regions using our default kernel," continued Hill. Developers utilising the effect can also control how it will be viewed by the end user. "In our system the kernel is a user-supplied image that represents the response of the optical device to a single point source in the center of the viewing field."

Other new features such as localised volumetric fog with full lighting and shadowing, a new animation node that enables developers to simulate a physics asset within the Animation Blueprint and a new cloth solver that delivers enhanced control. ■

The develop Post-Mortem

RAINBOW SIX **SIEGE**

As Rainbow Six Siege's 'Year Two' content continues to release, **Develop** talks to Ubisoft Montreal's brand director for the game, Alexandre Remy, about the challenges the team faced on the title

Writing a post-mortem about *Rainbow Six Siege* can very much be seen as an ironic exercise, since Ubisoft's tactical shooter couldn't be more alive and kicking. With 'Year Two' having launched just a few months ago, and with more content on the way, the game's life is far from over.

"'Games as a service' is a model that encourages extremely engaging games, rewarding the time that players put into it. It just keeps being such a good investment," Ubisoft Montreal's brand director for Rainbow Six Alexandre Remy tells Develop. "There are very few games that compare to *Rainbow* as a service model. What we think is amazing from a player's point of view is the fact that the game is good enough that you want to keep playing and we make sure that you keep your investment. It is great for the community."

The very idea of a large community congregating around *Rainbow Six Siege* at times seemed unlikely. Having been announced at E3 2014, and set to launch in October the following year, *Siege* missed its first release window and was pushed back to December 2015, based on players' feedback.

"We felt there are adjustments and improvements we can make, including improving the co-op experience across all game modes, weapon and gadget balancing, as well as menu and interface navigation," the dev team wrote in a blog post at the time.

And that's not even the whole story, as the game was initially unveiled as *Rainbow Six Patriots* way back in November 2011, before being completely scrapped by Ubisoft to become *Siege*. The game just "wasn't working", Ubisoft's Laurent Detoc said at the time, adding that "*Rainbow* had to be remade". So that's exactly what the developers did.

"Late 2012, a brand new team of 25 devs were mandated to reinvent Rainbow Six," Remy explains. "All of us were fans of FPS games, and quickly came up with our main direction for the game: the siege. We wanted an asymmetrical confrontation between attackers and defenders featuring destruction as the main gameplay."

> **In Rainbow Six Siege, procedural destruction plays a central role**
>
> *Alexandre Remy, Ubisoft Montreal*

THE PATH OF DESTRUCTION

Destructible scenery quickly became the core element of *Rainbow Six Siege*.

"When we rebooted in January 2013, we had just made the breakthrough of the destruction engine," Remy continues, hinting at Snowdrop, the proprietary engine Ubisoft unveiled at E3 that year.

"As soon as we saw that, we were iterating on where to take the franchise. We said 'This needs to be in Rainbow Six. Rainbow Six Operators are destruction experts, they breach in through doors and walls. With the material-based destruction engine, it procedurally breaks everything down'. Then we decided to make this the centre of the game's experience."

Since interaction with the environment is one of the most important parts of the gameplay, that required a lot more work from the dev team to make sure the environment reacted appropriately.

"In *Rainbow Six Siege*, procedural destruction plays a central role and is used to change the environment and influence the game's outcome. It's based on materials, which need to react logically and consistently to different stimuli," Remy explains.

"While it is vastly more complex than simple pre-fragmented destruction, due to both tech and production challenges, it allows for a degree of uniqueness and flexibility that just wouldn't have been possible otherwise. We're getting to the point where we can really allow players to remodel and interact with the world. It's not something you see often in triple-A games, and in competitive shooters it's a definite first."

But getting to that point was not plain sailing for Ubisoft, and it influenced the team's approach to level design.

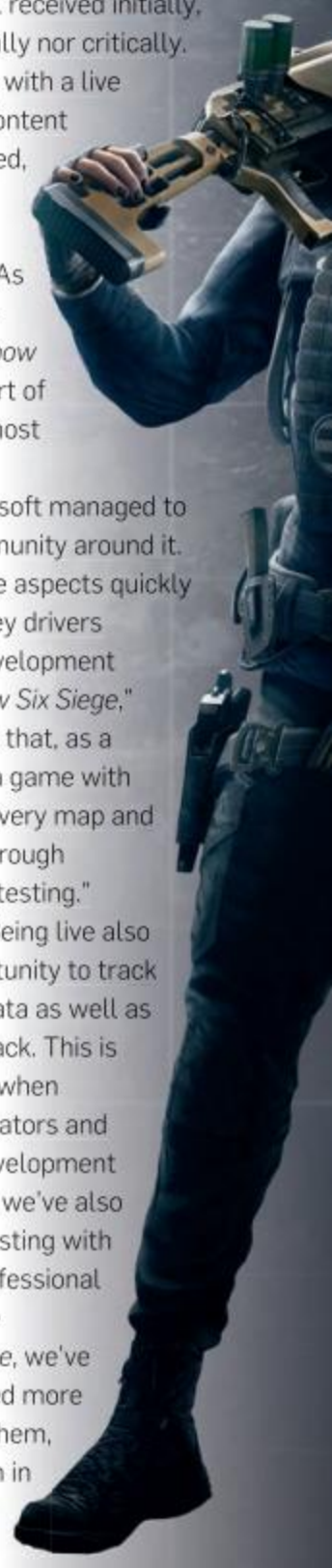
"It presented a lot of challenges. You're not working with an environment that is static, you are working with an environment that can be destroyed," he says. "The core feature of our gameplay is the destruction and opening up new sightlines. It presents a challenge in the form that the teams have to design this whole level, but also understand that the level is going to be opened up and has to make sense. So in terms of gameplay metrics, it was very tricky for the level design and art team."

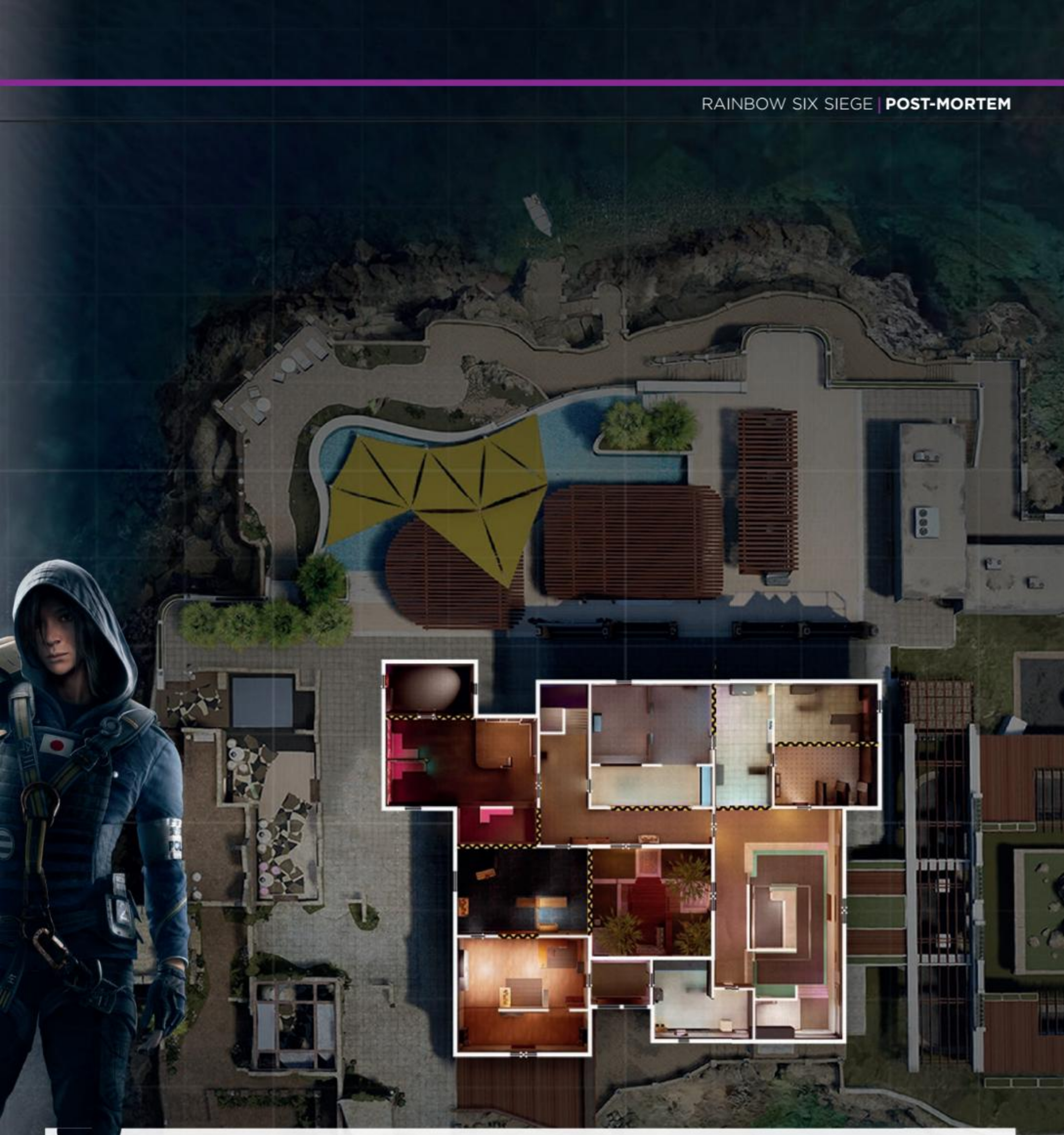
COMPETITIVE NATURE

Despite Ubisoft's extensive work on getting the nitty-gritty development details on point, *Rainbow Six Siege* was not extremely well received initially, neither commercially nor critically. But the good thing with a live game is that the content keeps being updated, and eventually players kept coming back to it. As a result, two years after launch, *Rainbow Six Siege* is still part of the UK Top 40 almost every week. And that's because Ubisoft managed to create a real community around it.

"The competitive aspects quickly grew to become key drivers throughout the development process of *Rainbow Six Siege*," Remy says, adding that, as a result of creating a game with esports in mind, "every map and operator [went] through extensive internal testing."

He continues: "Being live also gives us the opportunity to track our players' raw data as well as gather their feedback. This is extremely helpful when balancing the operators and maps. With the development of our Pro League, we've also added a layer of testing with the help of our professional players. Ever since *Operation Dust Line*, we've progressively added more checkpoints with them, incorporating them in our production





plan for some on-site and online playtest and feedback sessions. The Pro Players' level of gameplay resembles a microscope zooming in for potential issues and improvements. They can see within hours what regular players could notice days or weeks later. It's very impressive to watch them play and analyse our game."

This close relationship between Ubisoft and its community even allowed the developer to discover unexpected play styles and adapt development accordingly.

"The best example would be Bandit tricks," Remy details. "It was discovered during the beta. The idea is that Bandit keeps on deploying/picking up his batteries, which fries thermite charges, without putting the batteries at risk of an EMP. We never had anyone doing that during production, we had no idea Bandit could do that before release. But we love it, it has become a full part of this operator and of the game in general – and on some maps it can have a big impact on how defence is organised."

Designing levels that fit *Siege*'s competitive nature was also difficult.

"Balance and fairness is essential," Remy continues. "Therefore, the objective locations and maps must be both balanced and interesting for our attackers and defenders. We've played a lot with the levels of destruction in our maps, as well as different map formats. We believe it's important to keep this variety and freedom while developing our game. It is also crucial to keep following the metagame and to learn from our players behaviour in-game," he concludes. ■

NEXT ISSUE
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